

Exhibit 20  
HE-173 UIC  
3 June '82

TR10

# CALIFORNIA OIL & GAS FIELDS

NORTHERN CALIFORNIA



Third Edition 1981  
Supplement 1978  
Second Edition 1973  
First Edition 1960

Sacramento



**STATE OF CALIFORNIA**  
EDMUND G. BROWN JR., *Governor*

**RESOURCES AGENCY**  
HUEY D. JOHNSON, *Secretary*

**DEPARTMENT OF CONSERVATION**  
JAN DENTON, *Director*

**DIVISION OF OIL AND GAS**  
M. G. MEFFERD, *State Oil and Gas Supervisor*

# INTRODUCTION

This publication is a revised edition of the *Northern California* section of *California Oil and Gas Fields, Volume I*, printed in 1973 (see map on page v). Geologic and statistical data for all oil and gas fields in Northern California (current to 1980) are included, as well as regional cross sections and index maps.

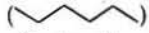
All fields are arranged alphabetically; however, field names preceded by compass directions, such as South Afton, will be found listed as Afton, South, etc.

## MAP SHEETS

### Definitions

*Typical log* - An electric log that best typifies the electric log characteristics of wells in a particular oil or gas field.

*Composite log* - An electric log made by combining sections of electric logs from two or more wells to depict the general log characteristics of a particular oil or gas field.

NOTE: Some typical or composite logs are from wells outside the administrative field boundaries; therefore, the total log depth may be greater than the deepest well in the field. In addition, some long log sections not critical for correlation purposes have been removed. The sawtooth symbol () is used to indicate that a section of a log has been removed.

### Productive Area

The productive area of a field or area can be determined from (1) the well symbols, or (2) shading on the contour map. (Shading is also used on the cross sections to indicate productive zones and the approximate limits of production.) The productive area is the *maximum* productive area as of January 1, 1981. Productive areas shown on the index maps are generalized.

### Contour Map Depth Datum

The depth datum used for the contour maps is sea level.

### Map Scale

Generally, map scales can be inferred from the public land survey data on the contour maps. When this is not possible, a map scale is shown. Cross sections that are depicted schematically are not necessarily drawn to scale.

## DATA SHEETS




























*Discovery well and deepest well data* - The discovery well listed is the discovery well for the field or area. The total depth for the deepest well is the drilled depth. If the well is directional, the true vertical depth is given under the remarks section.

*Pool or zone data* - Pools are listed in stratigraphic sequence, from left to right. Properties that are not available on a pool basis are listed under the field or area column.

*Reservoir Rock and Fluid Properties* - Values calculated from logs are footnoted as such. Values without footnotes are derived from core or sidewall sample data. Ranges are given where applicable. Dashes are used where data are not available to the Division of Oil and Gas.

FOOTNOTES: \* Average value.  
\*\* Estimated value (based on best available data).  
\*\*\* Representative values for area, formation, and depth.  
† Log derived value from geophysical logs such as electric, neutron-density, or sonic.  
†† Calculated value.

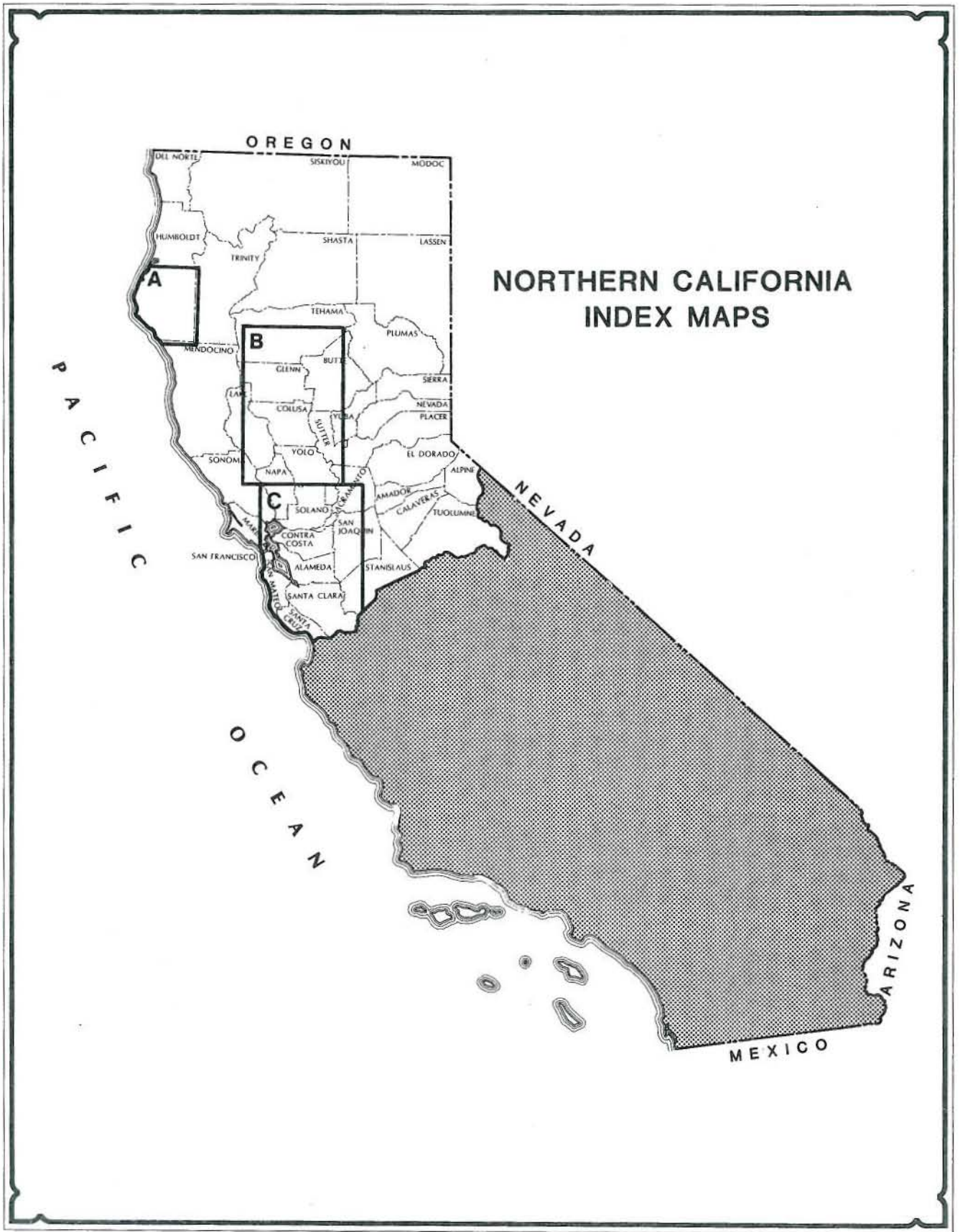
## MAP SHEET AND CROSS SECTION LEGEND

<p> Location</p> <p> Drilling - idle</p> <p> Abandoned - dry hole</p> <p> Completed - oil</p> <p> Idle - oil</p> <p> Abandoned - oil</p> <p> Completed - gas</p> <p> Idle - gas</p> <p> Abandoned - gas</p> <p> Water disposal</p> <p> Oil well converted to water disposal</p> <p> Intersection of borehole and contoured horizon</p> <p> Productive area</p> <p> Contour line (good control)</p> <p> Contour line (poor control)</p> <p> Axis of anticline</p> <p> Axis of syncline</p>	<p> Fault</p> <p> Possible fault</p> <p> Fault dip direction</p> <p> Fault movement (+ = up, - = down)</p> <p> Fault movement</p> <p> Fault movement (⊙ = toward observer, ⊕ = away from observer)</p> <p> Unconformity</p> <p> Section removed from an electric log</p> <p> Oil zones in cross sections</p> <p> Gas zones in cross sections</p>
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### ABBREVIATIONS

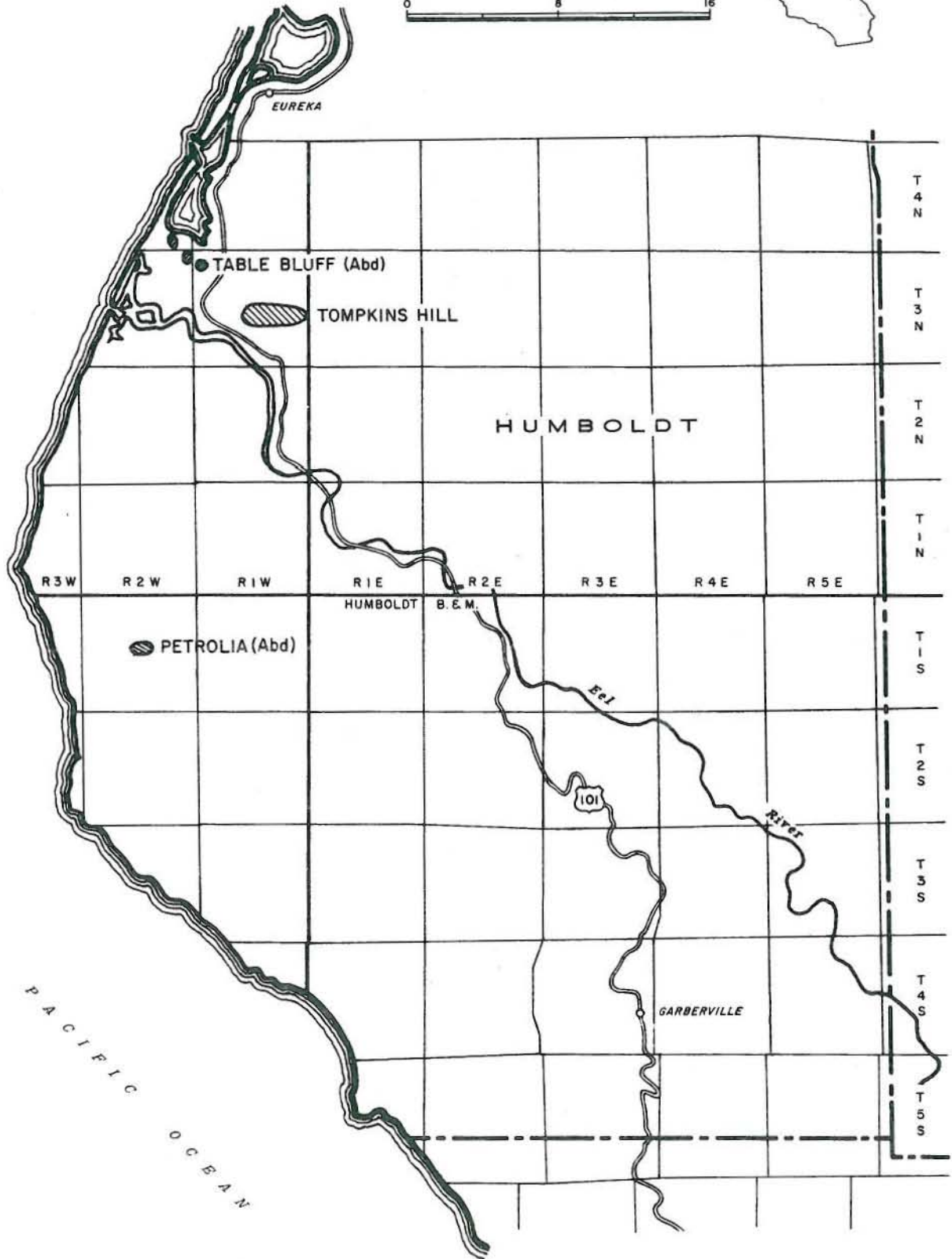
B&M	Base and Meridian	Holo.	Holocene
MD	Mount Diablo	Pleis.	Pleistocene
SB	San Bernardino	Plio.	Pliocene
H	Humboldt	Mio.	Miocene
psig	pounds per square inch (gauge)	Olig.	Oligocene
bbl	barrel (42 U.S. gallons)	Eo.	Eocene
Mcf	1000 cubic feet	Paleoc.	Paleocene
btu	British thermal unit	Cret.	Cretaceous
gr/gal	grains per gallon	Jur.	Jurassic
cem.	cemented	E or e	early
N.A.	not available	M or m	middle
--	not applicable	L or l	late
abd.	abandoned	undiff.	undifferentiated

# NORTHERN CALIFORNIA INDEX MAPS



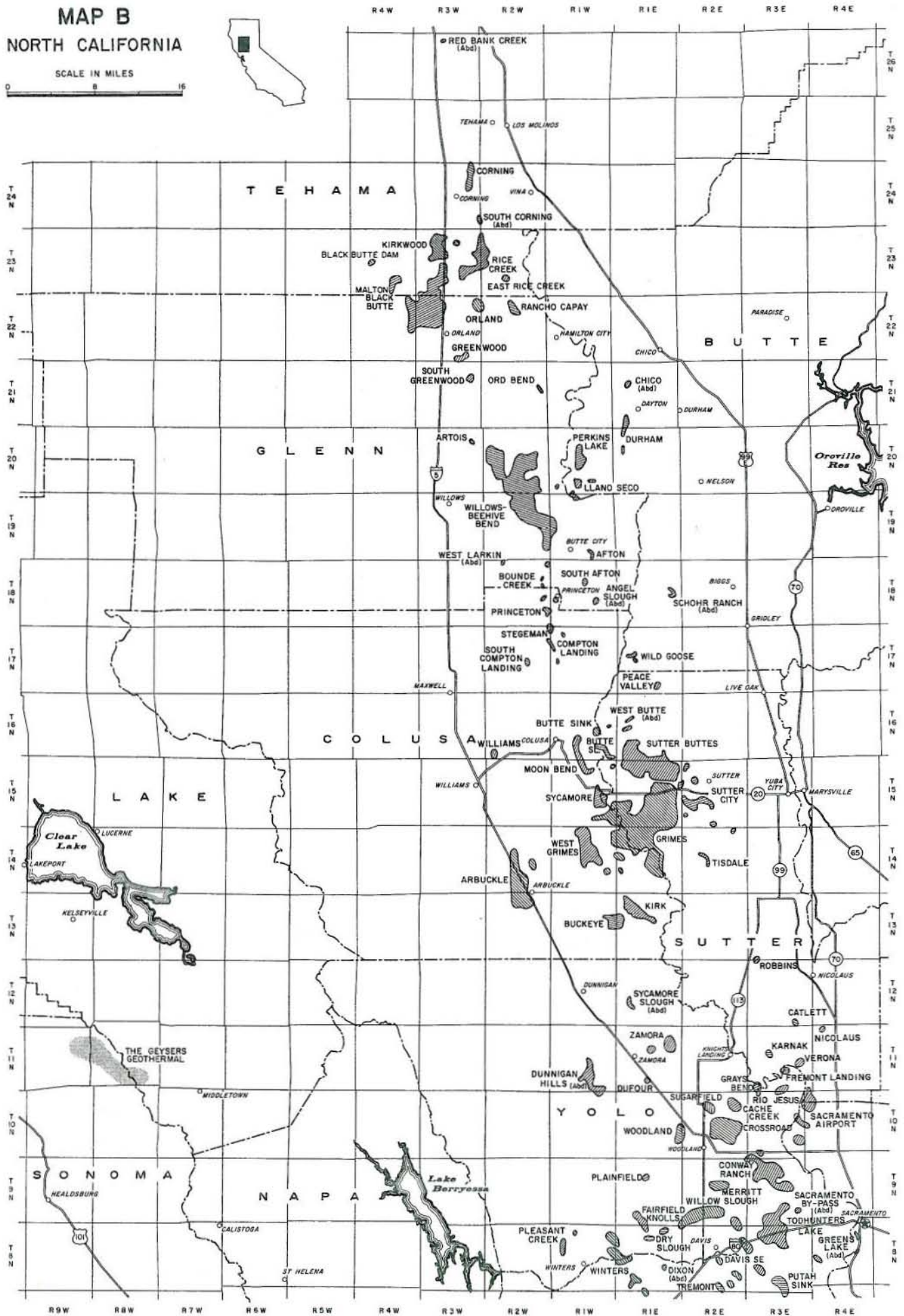
# MAP A NORTH CALIFORNIA

SCALE IN MILES



# MAP B NORTH CALIFORNIA

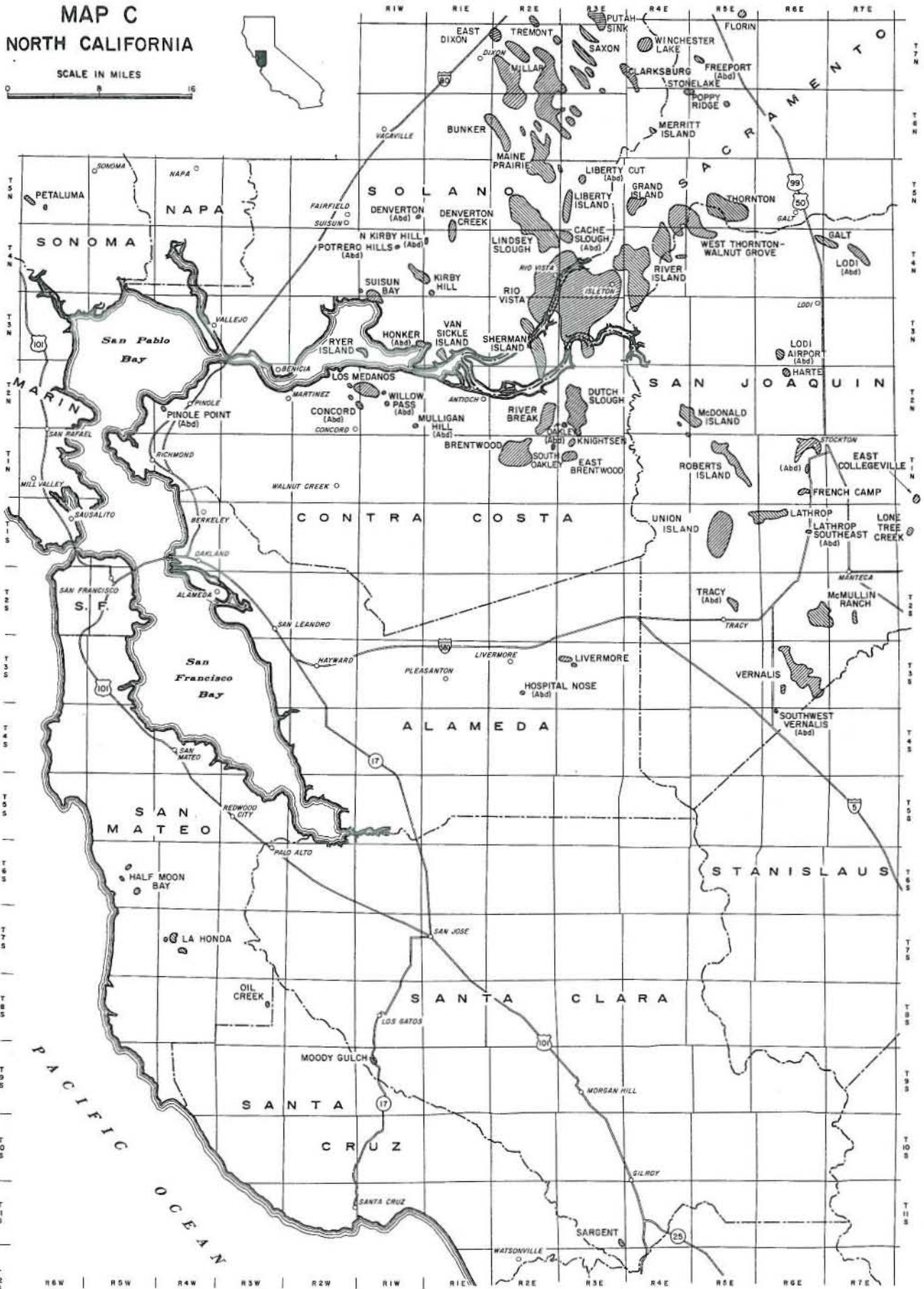
SCALE IN MILES  
0 8 16





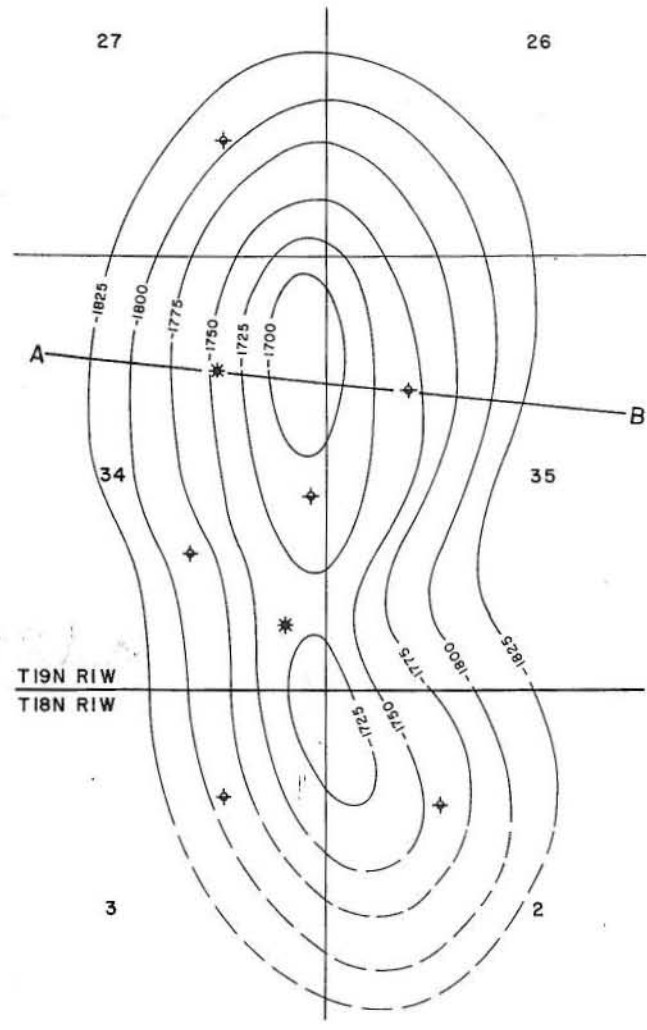
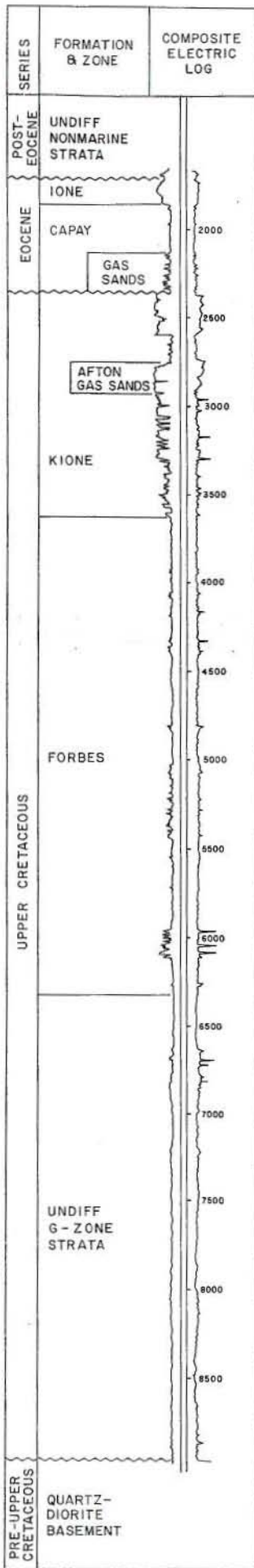
# MAP C NORTH CALIFORNIA

SCALE IN MILES

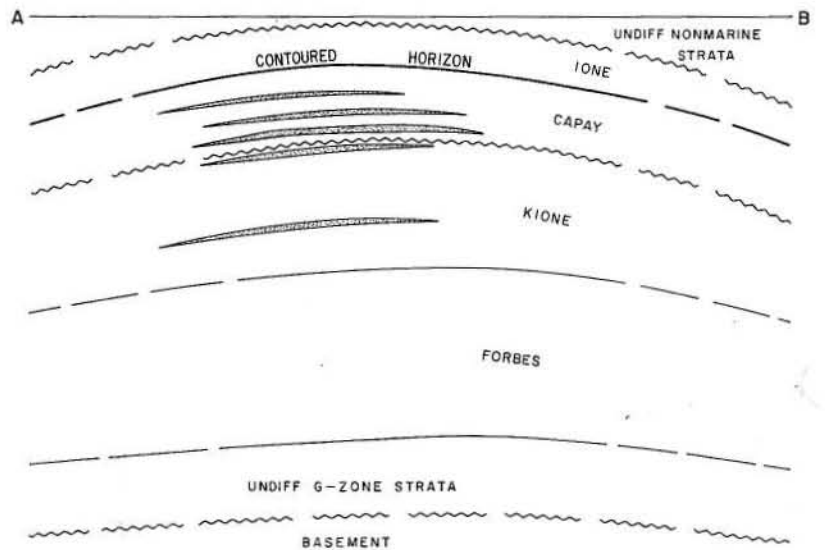


# MAPS AND DATA SHEETS

# AFTON GAS FIELD



CONTOURS ON TOP OF CAPAY



COUNTY: GLENN

AFTON GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Buttes Resources Co. "Afton Community 1" 1	Richfield Oil Corp. "Afton Community 1" 1	34 19N 1W	MD	5,247	Afton	
Deepest well	ARCO Oil and Gas Co. "Roco-Afton Community" 66-34	Atlantic Richfield Co. "ROCO-Afton Community" 66-34	34 19N 1W	MD	8,992		basement pre-Lt. Cretaceous

POOL DATA

ITEM	CAPAY	AFTON	FIELD OR AREA DATA			
Discovery date .....	November 1949	February 1944				
Initial production rates						
Oil (bbl/day) .....	485	5,700				
Gas (Mcf/day) .....	640	550				
Flow pressure (psi) .....	11/64	5/8				
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	800	1,225				
Reservoir temperature (°F) .....	105	116				
Initial oil content (STB/ac.-ft.) .....	380	750				
Initial gas content (MSCF/ac.-ft.) .....	Capay	Kione				
Formation .....	Eocene	Late Cretaceous				
Geologic age .....	1,830	2,650				
Average depth (ft.) .....	30	25				
Average net thickness (ft.) .....						
Maximum productive area (acres) .....						160

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	25*	30*				
Soj (%) .....	35*	30*				
Swj (%) .....	65*	70*				
Sgj (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.656††	.656††				
Heating value (Btu/cu. ft.) .....	770	770				
Water:						
Salinity, NaCl (ppm) .....	26,400	26,400				
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

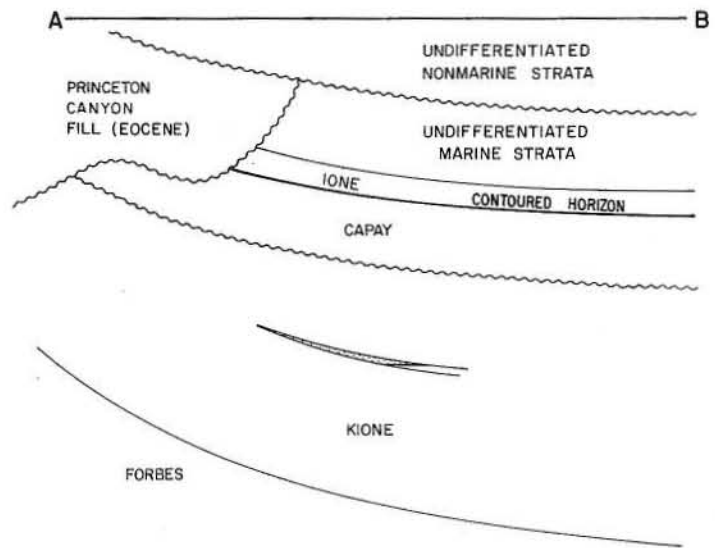
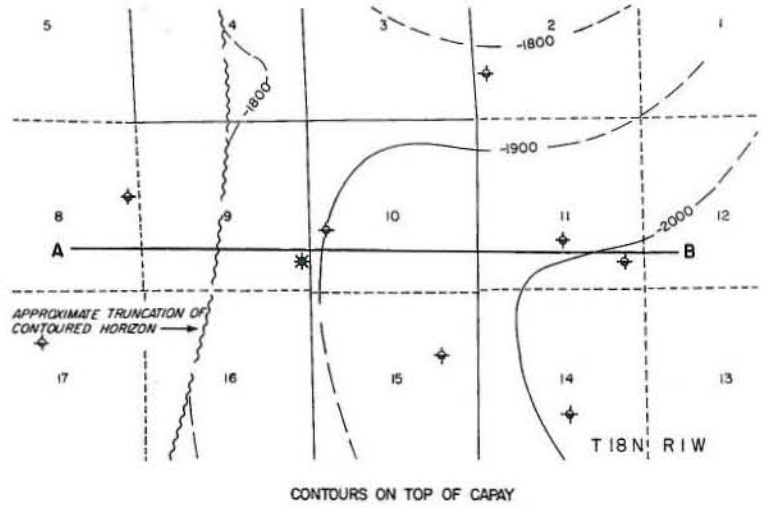
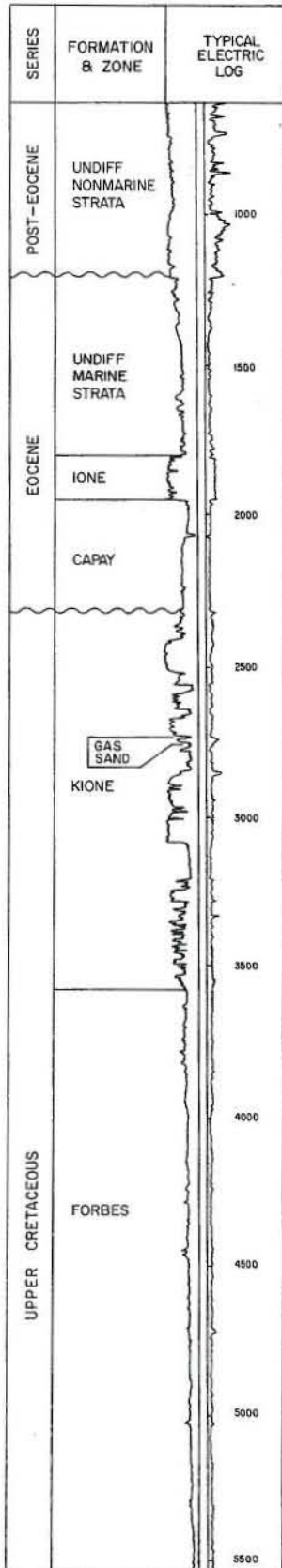
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						821,134
Year .....						1949

Base of fresh water (ft.): 1,300

Remarks:

Selected References:

# SOUTH AFTON GAS FIELD



COUNTY: GLENN

AFTON, SOUTH, GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "Cecil" 1-9	Same as present	9 18N 1W	MD	5,740	Kione	Forbes Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	POOL DATA					FIELD OR AREA DATA
	KIONE					
Discovery date .....	November 1975					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	9,600					
Flow pressure (psi) .....	1,131					
Bean size (in.) .....	-					
Initial reservoir pressure (psi) .....	1,200					
Reservoir temperature (°F) .....	110					
Initial oil content (STB/ac.-ft.) .....	740					
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Kione					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	2,735					
Average net thickness (ft.) .....	15					
Maximum productive area (acres) .....	40					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	30*					
So <sub>g</sub> (%) .....						
Sw <sub>g</sub> (%) .....	30*					
Sg <sub>i</sub> (%) .....	70*					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

<b>Oil:</b>						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
<b>Gas:</b>						
Specific gravity (air = 1.0) .....	.652 <sup>††</sup>					
Heating value (Btu/cu. ft.) .....	778					
<b>Water:</b>						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

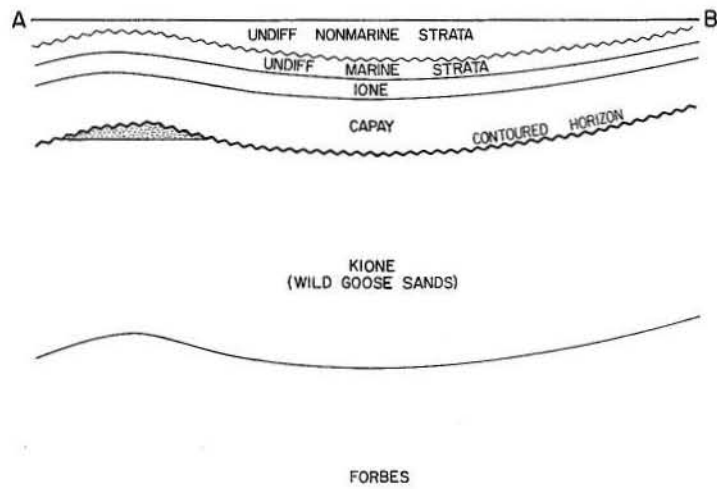
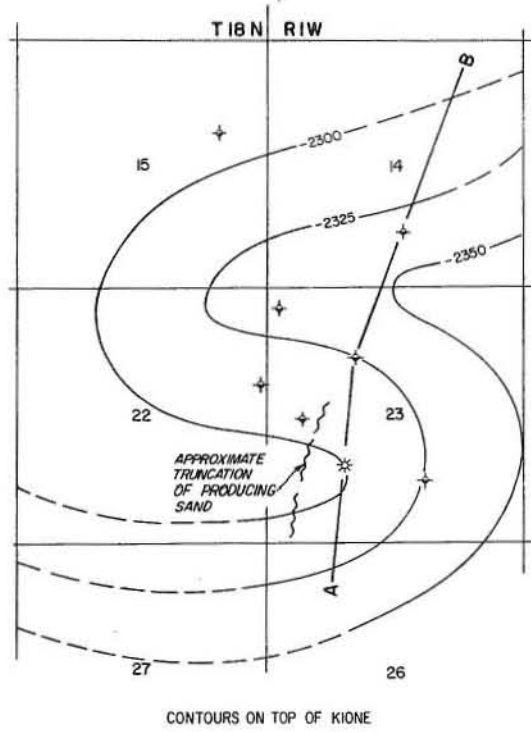
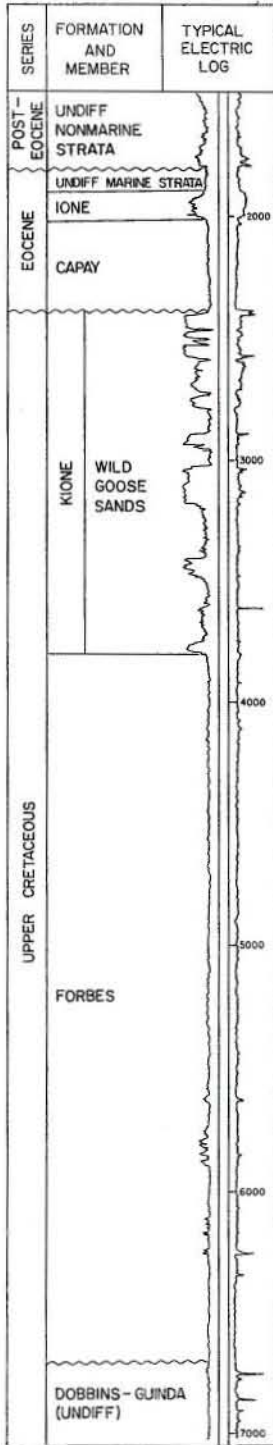
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	48,846					
Year .....	1979					

Base of fresh water (ft.): 1,300

Remarks: Commercial gas deliveries began in 1979.

Selected References:

# ANGEL SLOUGH GAS FIELD (Abandoned)



COUNTY: GLENN

ANGEL SLOUGH GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Exxon Corp. "Angel Slough Operating Unit" 1	Humble Oil & Refining Co. "John R. Hulien et ux" 1	23 18N 1W	MD	7,019	Wild Goose	Guinda Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	POOL DATA					FIELD OR AREA DATA
	WILD GOOSE					
Discovery date .....	June 1960					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	2,350					
Flow pressure (psi) .....	800					
Bean size (in.) .....	22/64					
Initial reservoir pressure (psi) .....						
Reservoir temperature (°F) .....	109					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	709					
Formation .....	Kione					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	2,383					
Average net thickness (ft.) .....	15					
Maximum productive area (acres) .....	160					
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	30*					
S <sub>oj</sub> (%) .....	25*					
S <sub>wj</sub> (%) .....	75*					
S <sub>gj</sub> (%) .....						
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	-					
Heating value (Btu/cu. ft.) .....	784					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	133,998					
Year .....	1964					

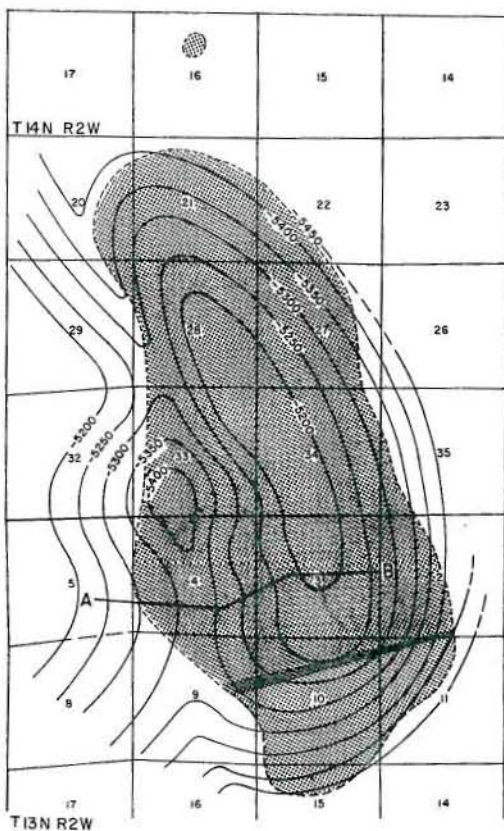
Base of fresh water (ft.): 1,050

Remarks: Commercial gas deliveries began in March 1962. The field was abandoned in July 1965. One well was completed and cumulative gas production was 399,600 Mcf.

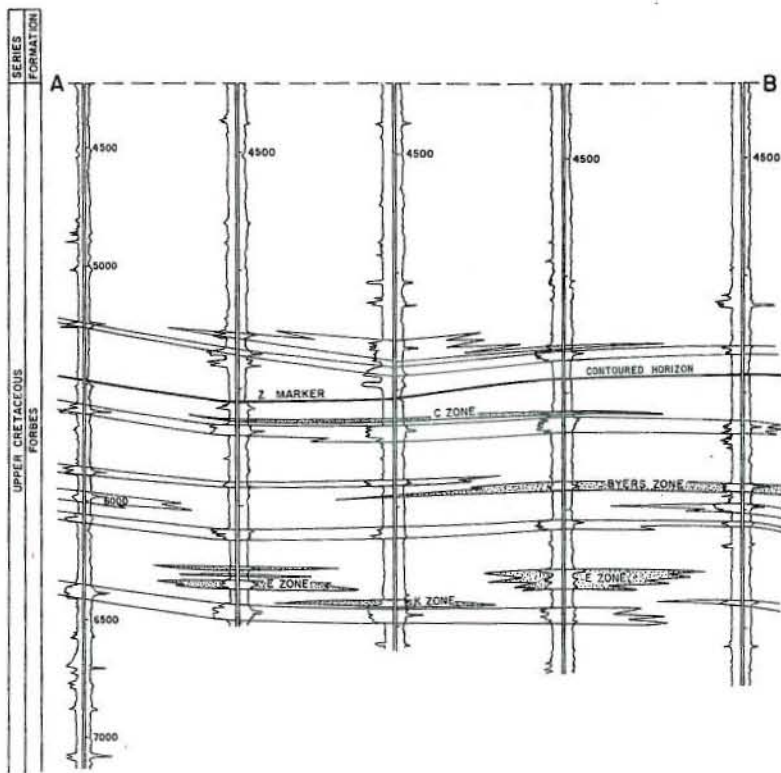
Selected References:



# ARBUCKLE GAS FIELD



CONTOURS ON Z ELECTRIC LOG MARKER



COUNTY: COLUSA

ARBUCKLE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Gulf Oil Corp. "Arbuckle Unit C" 1	Western Gulf Oil Co. "Arbuckle Unit C" 1	3 13N 2W	MD	6,150	Forbes	
Deepest well	Occidental Petroleum Corp. "Arbuckle Section 4 Unit" 1	Same as present	4 13N 2W	MD	12,007		Venado Late Cretaceous

POOL DATA

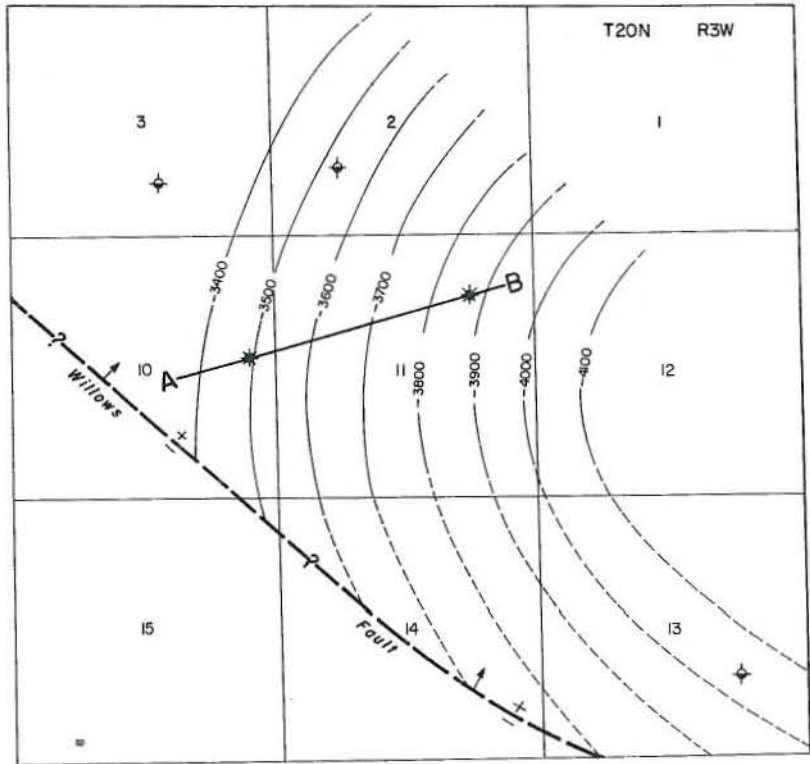
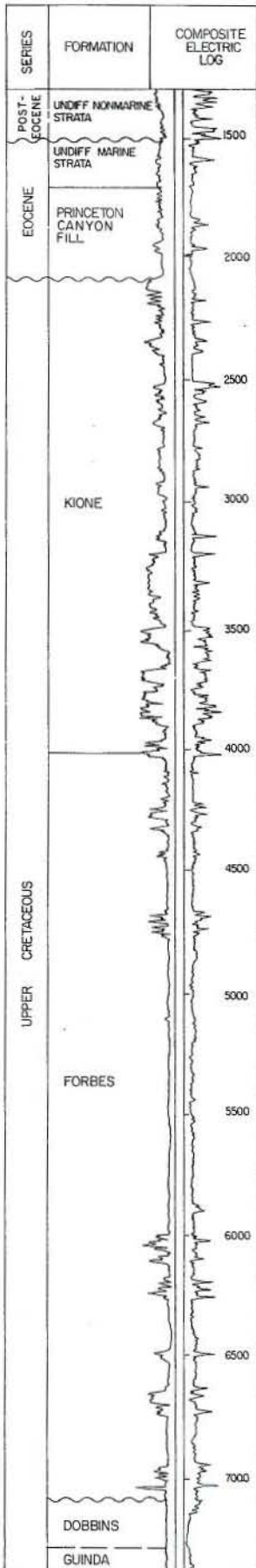
ITEM	POOL DATA					FIELD OR AREA DATA
	FORBES					
Discovery date .....	February 1957					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	7,780					
Flow pressure (psi) .....	1,245					
Bean size (in.) .....	1/2					
Initial reservoir pressure (psi) .....	2,200-4,800					
Reservoir temperature (°F) .....	100-133					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	800-1,400					
Formation .....	Forbes					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	4,430-7,150					
Average net thickness (ft.) .....	5-90					
Maximum productive area (acres) .....	5,495					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	23†					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	55†					
Sg <sub>j</sub> (%) .....	45†					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.565					
Heating value (Btu/cu. ft.) .....	980-1,010					
Water:						
Salinity, NaCl (ppm) .....	18,380					
T.D.S. (ppm) .....	18,760					
R <sub>w</sub> (ohm/m) (77°F) .....	.41					
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	8,622,237					
Year .....	1961					

Base of fresh water (ft.): 1,250

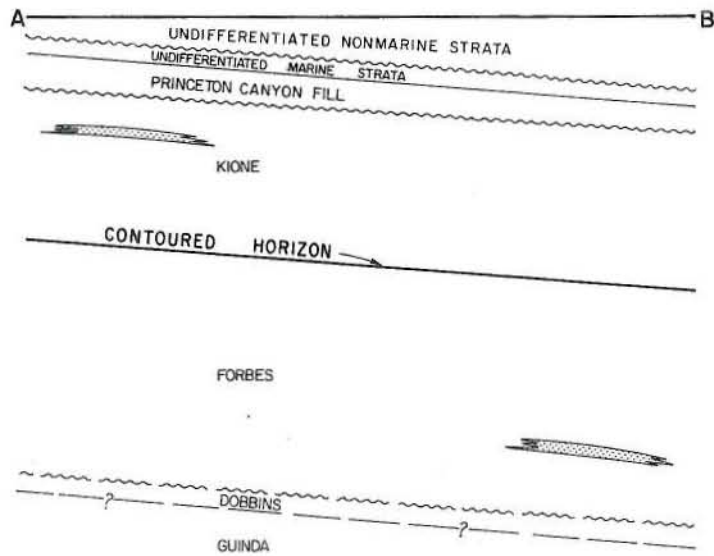
Remarks: Commercial gas deliveries began in March 1958. Most of the gas sand stringers have been given local names by operators.

Selected References: Huey, W. F., 1957, Arbuckle Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 43, No. 2.

# ARTOIS GAS FIELD



CONTOURS ON TOP OF FORBES



COUNTY: GLENN

ARTOIS GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	McCulloch Oil Corp. "Sunray-McCulloch-Expl. Von Bargaen" 1	Sunray Mid-Continent Oil Co. "Sunray-McCulloch-Coast Expl. Von Bargaen" 1	11 20N 3W	MD	7,447	Forbes	Guinda
Deepest well	Same as above	"	"	"	"	"	Late Cretaceous

POOL DATA

ITEM	UNNAMED		FIELD OR AREA DATA		
	UNNAMED	UNNAMED			
Discovery date .....	May 1977	November 1959			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	2,800	1,275			
Flow pressure (psi) .....		1,500			
Bean size (in.) .....		3/8			
Initial reservoir pressure (psi) .....	1,050	3,870			
Reservoir temperature (°F) .....	110	113			
Initial oil content (STB/ac.-ft.) .....		1,770			
Initial gas content (MSCF/ac.-ft.) .....	580	Forbes			
Formation .....	Kione	Late Cretaceous			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	2,520	5,885			
Average net thickness (ft.) .....	20	20			
Maximum productive area (acres) .....		80			

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	28*	25*			
Soj (%) .....					
Swi (%) .....	35*	40*			
Sgi (%) .....	65*	60*			
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (*API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.560	.564			
Heating value (Btu/cu. ft.) .....	1,005	1,000			
Water:					
Salinity, NaCl (ppm) .....		17,120			
T.D.S. (ppm) .....					
Rw (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

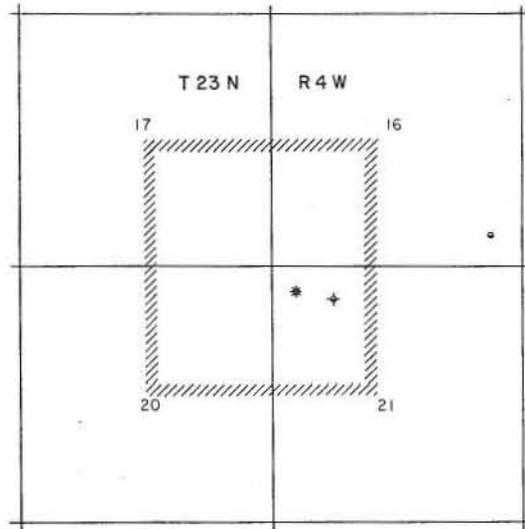
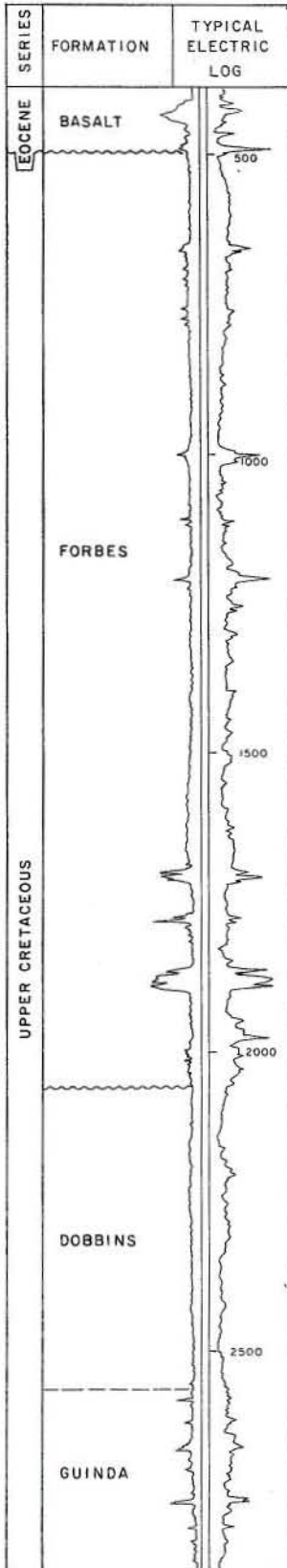
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					30,494
Year .....					1970

Base of fresh water (ft.): 2,100

Remarks: Commercial gas deliveries began in December 1966.

Selected References:

# BLACK BUTTE DAM GAS FIELD



SUBSURFACE DATA NOT AVAILABLE

COUNTY: TEHAMA

BLACK BUTTE DAM GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Delaware Northwest Exploration Co. "Hall" 1	Same as present	21 23N 4W	MD	2,060	Forbes	
Deepest well	Exxon Corp. "Arthur M. Hall" 1	Humble Oil & Refining Co. "Arthur M. Hall" 1	21 23N 4W	MD	2,866		Guinda Late Cretaceous

POOL DATA

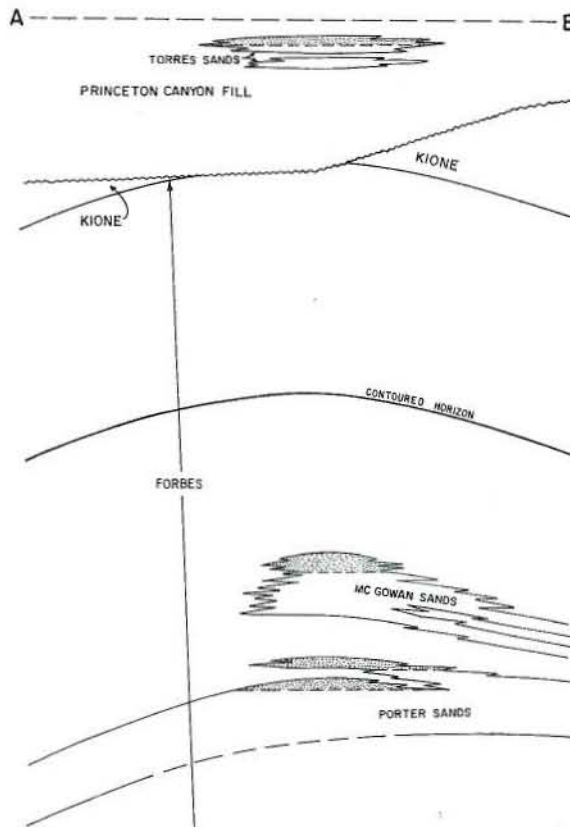
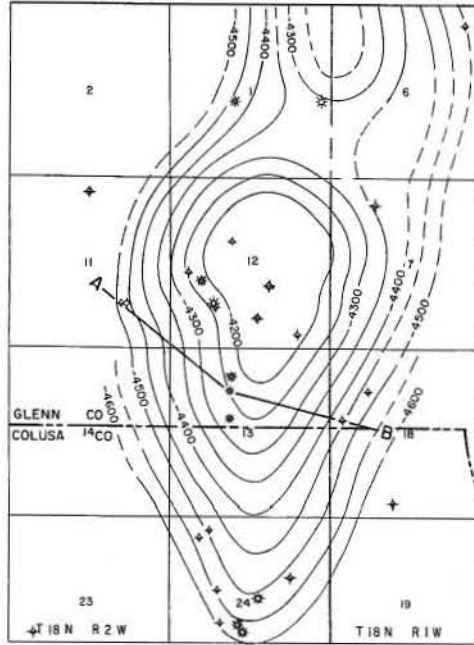
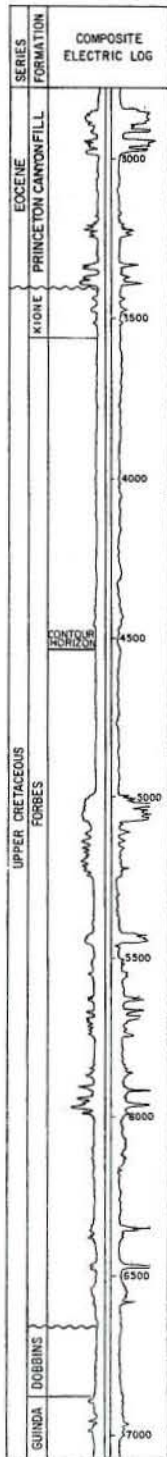
ITEM	FORBES					FIELD OR AREA DATA
Discovery date .....	July 1979					
Initial production rates						
Oil (bbl/day) .....	207					
Gas (Mcf/day) .....	230					
Flow pressure (psi) .....	3/16					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	350					
Reservoir temperature (°F) .....	88-92					
Initial oil content (STB/ac-ft.) .....	90-140					
Initial gas content (MSCF/ac-ft.) .....	Forbes					
Formation .....	Late Cretaceous					
Geologic age .....	650-950					
Average depth (ft.) .....	10-20					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	40					
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	18-23 †					
So <sub>i</sub> (%) .....	40-50 †					
Sw <sub>i</sub> (%) .....	50-60 †					
Sg <sub>g</sub> (%) .....						
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.560*					
Heating value (Btu/cu. ft.) .....	1,000*					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 300-400

Remarks: Commercial gas deliveries have not yet begun.

Selected References:

# BOUNDE CREEK GAS FIELD



COUNTY: COLUSA and GLENN

**BOUNDE CREEK GAS FIELD**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Exxon Corp. "Bounde Creek Opr. Unit 1" 1	Humble Oil & Refining Co. "Mamie" H. Porter et al" 2	13 18N 2W	MD	7,529	Forbes	Guinda Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

**POOL DATA**

ITEM	PRINCETON CANYON FILL	KIONE	FORBES	GUINDA	FIELD OR AREA DATA
Discovery date .....	October 1958	May 1977	September 1956	September 1959	
Initial production rates					
Oil (bbl/day) .....	3,100	2,500	3,980	1,848	
Gas (Mcf/day) .....	1,080	1,500	2,125	2,100	
Flow pressure (psi) .....	26/64	1/4	19/64	3/16	
Bean size (in.) .....					
Initial reservoir pressure (psi) .....	1,300	2,130	3,810-4,905	5,450	
Reservoir temperature (°F) .....	90	100	110-133	135	
Initial oil content (STB/ac.-ft.) .....	980	1,000-1,300	780-1,500	830-1,400	
Initial gas content (MSCF/ac.-ft.) .....	Princeton Cyn. fill	Kione	Forbes	Guinda	
Formation .....	Eocene	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Geologic age .....	2,840	3,700	5,450	6,965	
Average depth (ft.) .....	30	45	265	35	
Average net thickness (ft.) .....					
Maximum productive area (acres) .....					490

**RESERVOIR ROCK PROPERTIES**

Porosity (%) .....	31*	24-28†	15-24†	15-20***	
Soj (%) .....					
Swj (%) .....	25*	35-40†	45-60†	50-60***	
Sgi (%) .....	75*	60-65†	40-55†	40-50***	
Permeability to air (md) .....					

**RESERVOIR FLUID PROPERTIES**

Oil:					
Oil gravity (*API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.562	.568	.564		
Heating value (Btu/cu. ft.) .....	995	985	990		
Water:					
Salinity, NaCl (ppm) .....	-	-	9,400		
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					2,654,168
Year .....					1959

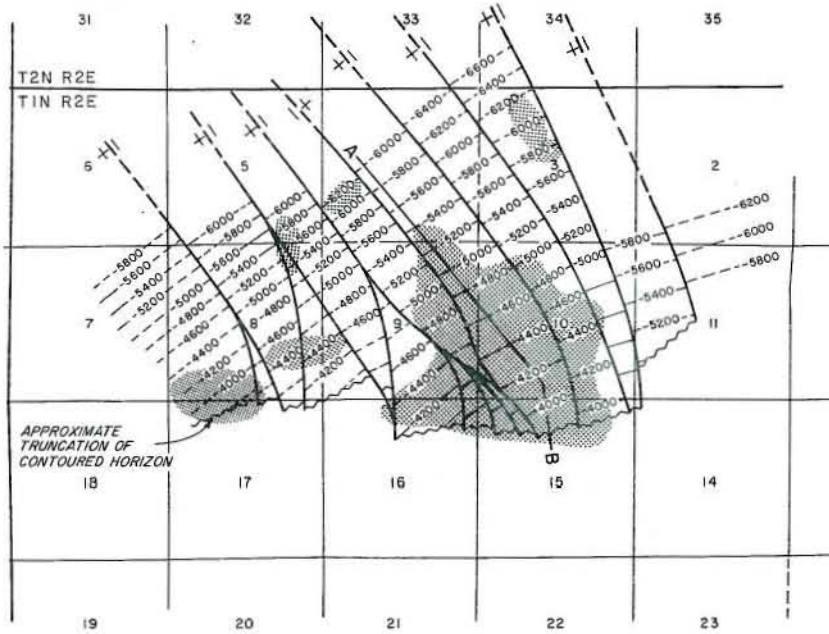
Base of fresh water (ft.): 1,800

Remarks: Commercial gas deliveries began in January 1958. Increased pressure gradients are encountered when drilling below 5,000 feet, requiring mud weight as high as 135 pounds per cubic foot.

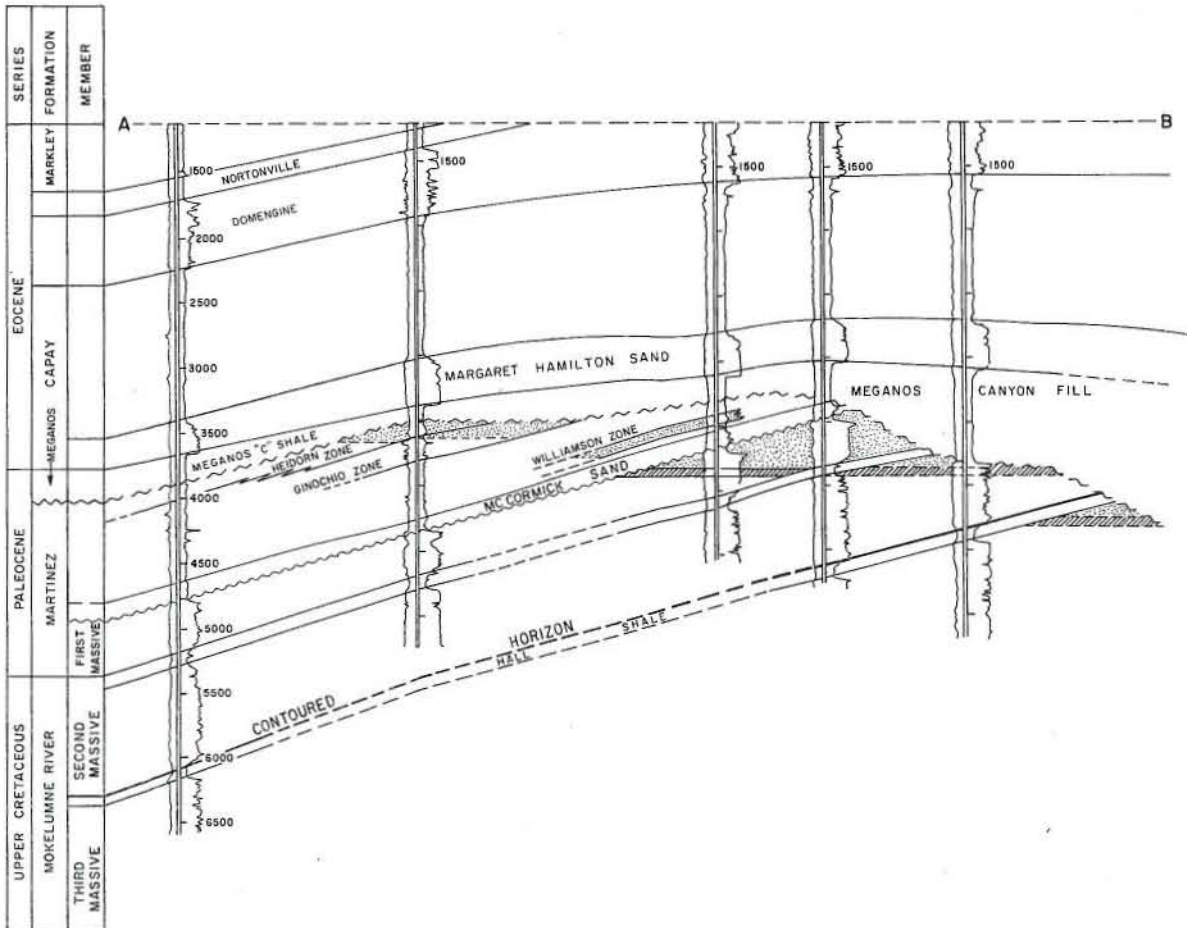
Selected References: Bruce, Donald D., 1959, Bounde Creek Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 45, No. 1.



# BRENTWOOD OIL FIELD



CONTOURS ON BASE OF SECOND MASSIVE SAND



COUNTY: CONTRA COSTA

BRENTWOOD OIL FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "Heidorn" 4-4	Same as present	4 1N 2E	MD	5,202	Heidorn	
Deepest well	Shell Oil Co. "Heidorn" 2-4	Same as present	4 1N 2E	MD	11,472		E-zone Late Cretaceous

POOL DATA

ITEM	PREWETT	HEIDORN	GINOCHIO	WILLIAMSON	FIRST MASSIVE	FIELD OR AREA DATA
Discovery date .....	July 1968	July 1962	August 1962	July 1962	July 1962	
Initial production rates						
Oil (bbl/day) .....	142	1,160	3,900	540	50	
Gas (Mcf/day) .....	82	196	1,175	475	670	
Flow pressure (psi) .....	205	196	1,175	475	476	
Bean size (in.) .....	19/64	1/2	24/64	13/64	16/64	
Initial reservoir pressure (psi) .....	1,750	1,600	1,650	1,650	1,650	
Reservoir temperature (°F) .....	124	122	122	132	132	
Initial oil content (STB/ac.-ft.) .....	760-920				1,050	
Initial gas content (MSCF/ac.-ft.) .....	680-820 <sup>b/</sup>	520-690	540-710	690	840 <sup>b/</sup>	
Formation .....	Martinez	Martinez	Martinez	Martinez	Martinez	
Geologic age .....	Paleocene	Paleocene	Paleocene	Paleocene	Paleocene	
Average depth (ft.) .....	5,770	3,520	3,530	3,570	3,600	
Average net thickness (ft.) .....	80	34	43	20	250	
Maximum productive area (acres) .....						1,330 <sup>c/</sup>

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	20-24	20-24	20-24	24	27	
So <sub>g</sub> (%) .....	60				60	
Sw <sub>i</sub> (%) .....	40	45-50	45-50	45	40	
Sg <sub>j</sub> (%) .....	60 <sup>b/</sup>	50-55	50-55	55	60 <sup>b/</sup>	
Permeability to air (md) .....				171		

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....	39				41	
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....	350				400	
Initial oil FVF (RB/STB) .....	1.22				1.17	
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.680	.678	.678	.678	.650	
Heating value (Btu/cu. ft.) .....	-	1,175	1,175	1,175	-	
Water:						
Salinity, NaCl (ppm) .....	2,800	8,900	13,400	-	1,000	
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						1,094,843
Year .....						1964
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): The water obtained from the productive zones is relatively fresh. See above for quality by zones.

Remarks:

- <sup>a/</sup> Initial gas content in the primary gas cap.
- <sup>b/</sup> Gas saturation in the primary gas cap.
- <sup>c/</sup> Maximum productive oil area in the Main Area is 850 acres and in the West Area is 80 acres. Maximum productive gas area is 420 acres.

Selected References: Sullivan, John C., 1963, Brentwood Oil Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 49, No. 2.

COUNTY: CONTRA COSTA

BRENTWOOD OIL FIELD  
Cont.....

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well							
Deepest well							

POOL DATA

ITEM	SECOND MASSIVE		THIRD MASSIVE		FIELD OR AREA DATA	
Discovery date .....	January 1963	September 1962				
Initial production rates						
Oil (bbl/day) .....	260	0 <u>d/</u>				
Gas (Mcf/day) .....	4,960	2,610				
Flow pressure (psi) .....	1,155	1,646				
Bean size (in.) .....	28/64	1/4				
Initial reservoir pressure (psi) .....	1,750	1,850				
Reservoir temperature (°F) .....	140	140				
Initial oil content (STB/ac-ft.) .....	1,000	900				
Initial gas content (MSCF/ac-ft.) .....	780 <u>d/</u>	880 <u>d/</u>				
Formation .....	Mokelumne River	Mokelumne River				
Geologic age .....	Late Cretaceous	Late Cretaceous				
Average depth (ft.) .....	3,770	4,025				
Average net thickness (ft.) .....	95	180				
Maximum productive area (acres) .....						

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	23	23				
S <sub>oi</sub> (%) .....	65	65				
S <sub>wi</sub> (%) .....	35	35				
S <sub>gs</sub> (%) .....	65 <u>b/</u>	65 <u>b/</u>				
Permeability to air (md) .....	242					

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....	39	39				
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....	400	500				
Initial oil FVF (RB/STB) .....	1.17	1.28				
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.610	.710				
Heating value (Btu/cu. ft.) .....	-	-				
Water:						
Salinity, NaCl (ppm) .....	450	1,712				
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.):

Remarks:

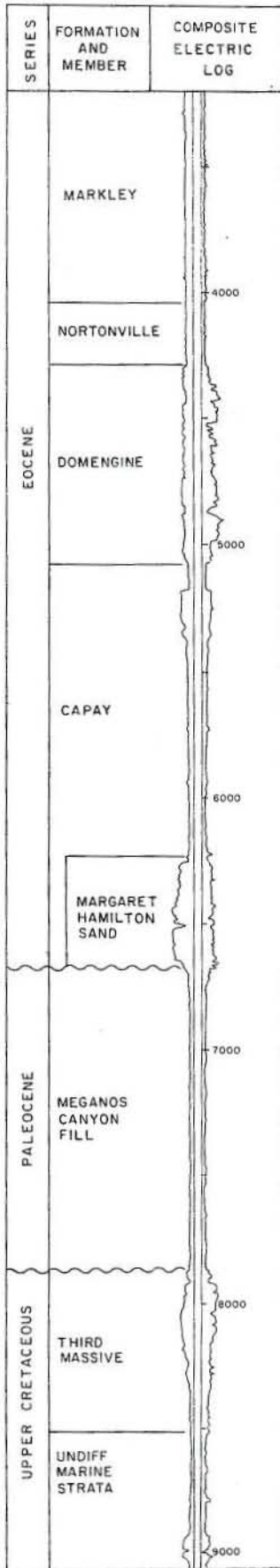
d/ The well was deepened in 1964 and recompleted as an oil well in the same zone; initial daily production: 240 bbl oil, 350 Mcf gas.

Selected References:

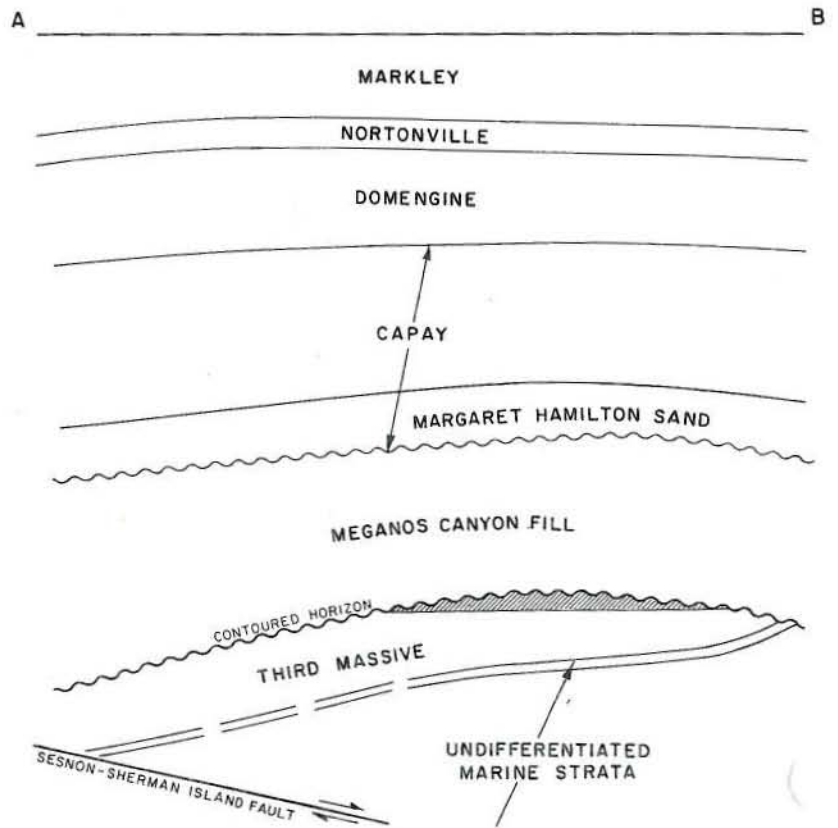
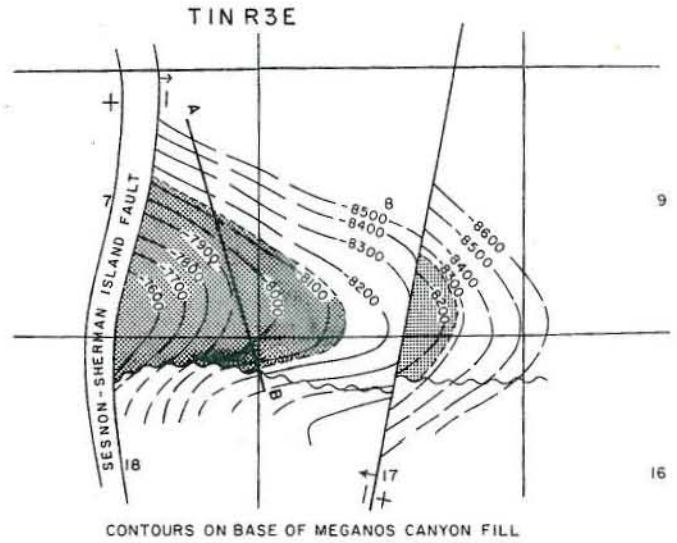
DATE:

CALIFORNIA DIVISION OF OIL AND GAS

# EAST BRENTWOOD GAS FIELD



DECEMBER 1980



COUNTY: CONTRA COSTA

BRENTWOOD, EAST, GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	DEPCO, Inc. "McLeod" 444-7	Same as present	7 IN 3E	MD	9,122	Third Massive	Moreno Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	THIRD MASSIVE					FIELD OR AREA DATA
Discovery date .....	April 1978					
Initial production rates						
Oil (bbl/day) .....	3,100					
Gas (Mcf/day) .....	1,720					
Flow pressure (psi) .....	18/64					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	3,641					
Reservoir temperature (°F) .....	212					
Initial oil content (STB/ac.-ft.) .....	1,100					
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Mokelumne River					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	8,000					
Average net thickness (ft.) .....	170					
Maximum productive area (acres) .....	260					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	20†					
So <sub>g</sub> (%) .....	40†					
Sw <sub>i</sub> (%) .....	60†					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.610					
Heating value (Btu/cu. ft.) .....	1,082					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

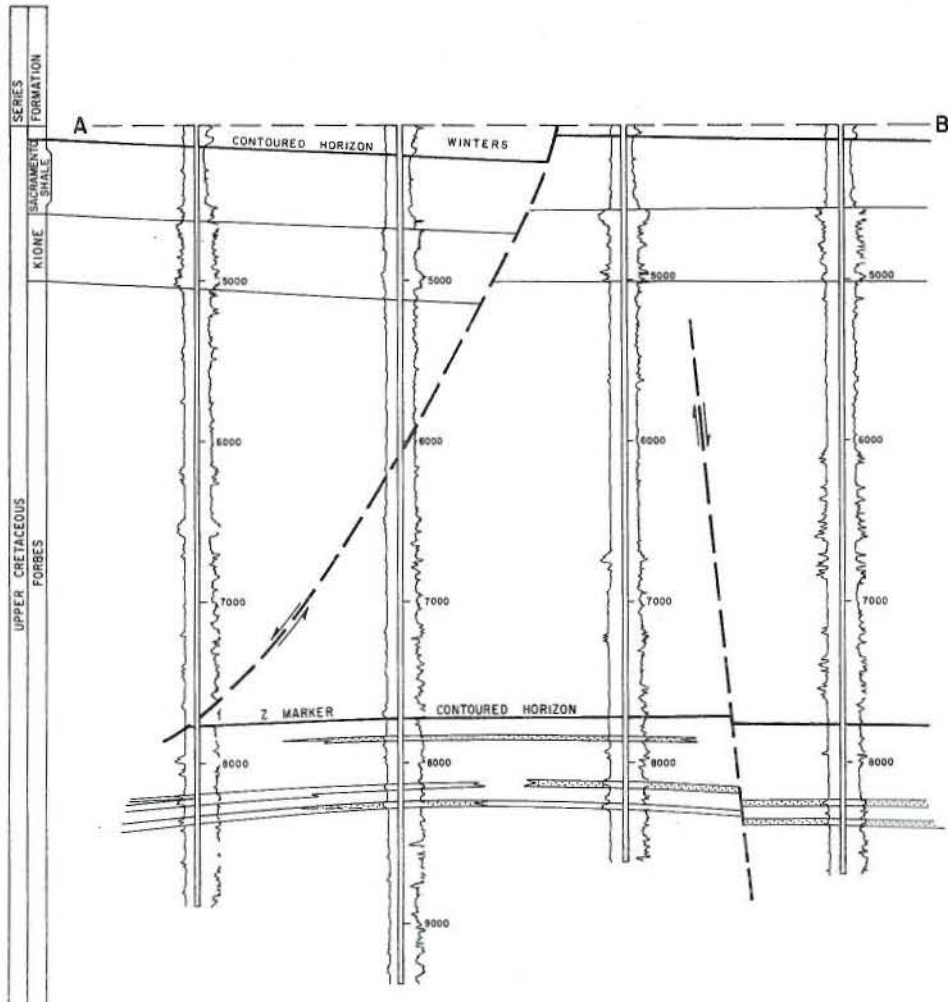
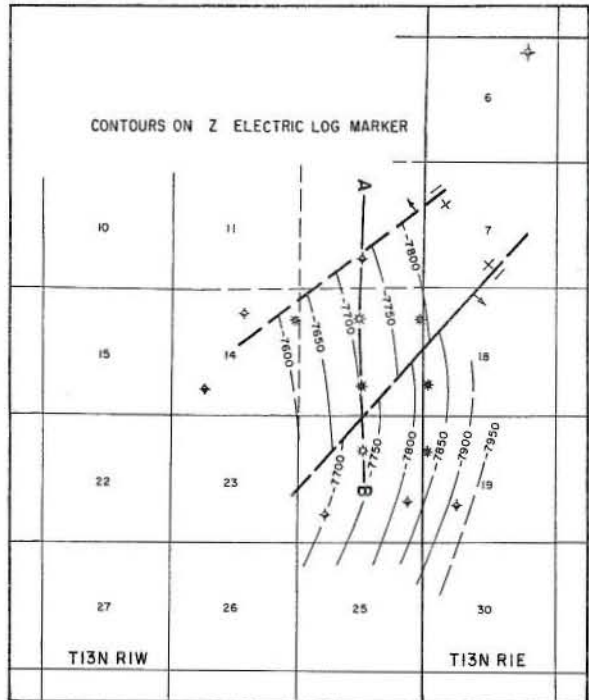
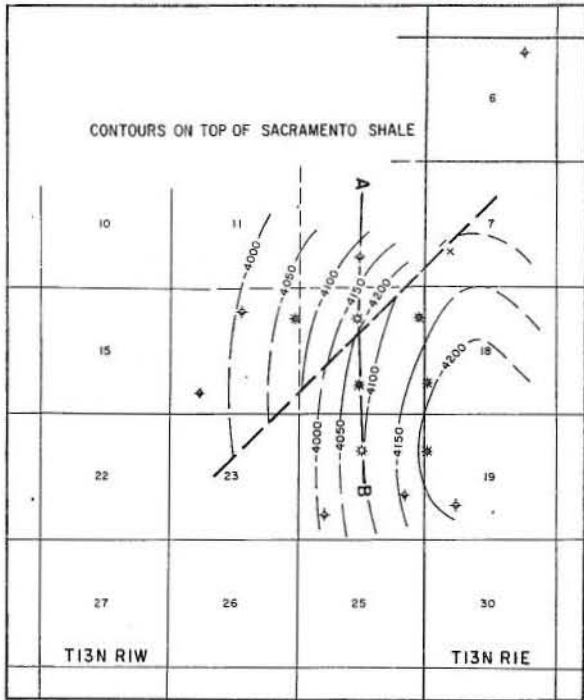
Peak oil production (bbl) Year .....						
Peak gas production, net (Mcf) Year .....	1,665,529 1979					

Base of fresh water (ft.): 300

Remarks: Condensate production for 1979 was 4,815 barrels.

Selected References:

# BUCKEYE GAS FIELD



COUNTY: COLUSA

BUCKEYE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	S.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Gulf Oil Corp. "Wilkins Unit A" 1	Western Gulf Oil Co. "F. J. Strain" 1	14 13N 1W	MD	8,972	unnamed	
Deepest well	Gulf Oil Corp. "Wilkins Unit C" 1	Gulf Oil Corp. of Calif. "Wilkins Unit C" 1	24 13N 1W	MD	11,678		Funks Late Cretaceous

POOL DATA

ITEM	UNNAMED					FIELD OR AREA DATA
Discovery date .....	January 1960					
Initial production rates						
Oil (bbl/day) .....	2,450					
Gas (Mcf/day) .....	1,800					
Flow pressure (psi) .....	9/16					
Bean size (in.) .....	4,115-5,950					
Initial reservoir pressure (psi) .....	132-144					
Reservoir temperature (°F) .....						
Initial oil content (STB/ac.-ft.) .....	1,000-2,300					
Initial gas content (MSCF/ac.-ft.) .....	Forbes					
Formation .....	Late Cretaceous					
Geologic age .....	7,850-8,510					
Average depth (ft.) .....	10-30					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	1,120					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	21-24					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	43-53					
Sg <sub>g</sub> (%) .....	47-57					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.534					
Heating value (Btu/cu. ft.) .....	1,015					
Water:						
Salinity, NaCl (ppm) .....	15,400					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

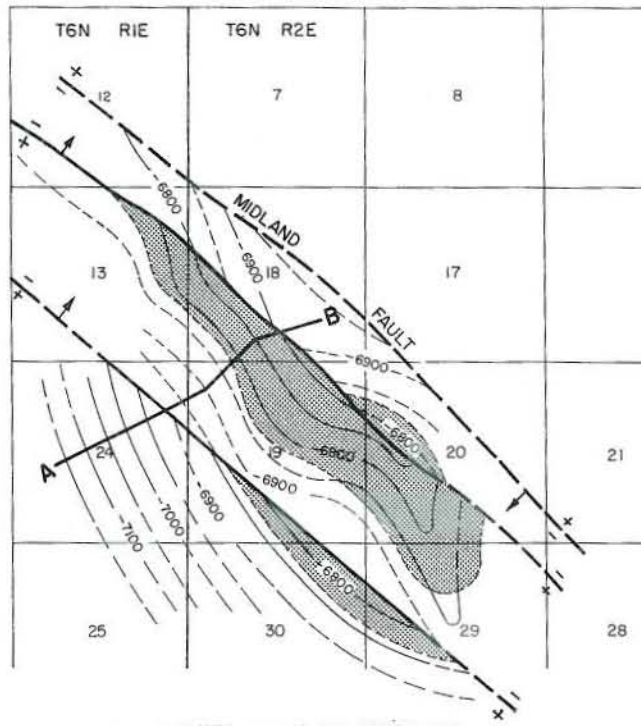
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	1,553,025					
Year .....	1962					

Base of fresh water (ft.): 1,950

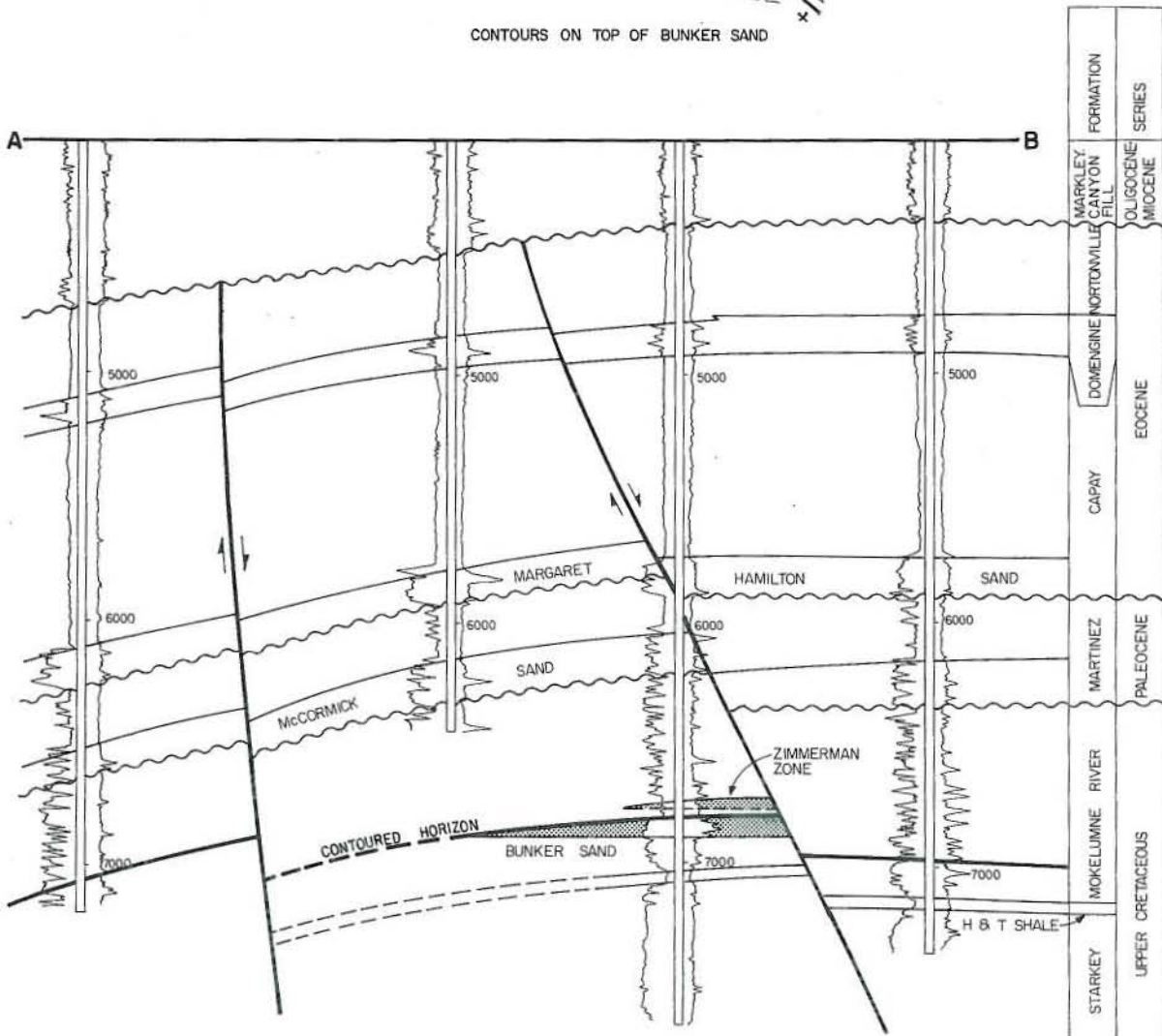
Remarks:

Selected References: Hunter, William J., 1962, Buckeye Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 48, No. 1.

# BUNKER GAS FIELD



CONTOURS ON TOP OF BUNKER SAND





COUNTY: SOLANO

**BUNKER GAS FIELD**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess Corp., Unit Oper. "BGZU" 701	G. E. Kadane & Sons "Maine Prairie Gas Unit A" 1	20 6N 2E	MD	7,500	Bunker	
Deepest well	Amerada Hess Corp., Unit Oper. "BGZU" 702	G. E. Kadane & Sons "Maine Prairie Gas Unit A" 2	19 6N 2E	MD	10,098		Winters Late Cretaceous

**POOL DATA**

ITEM						FIELD OR AREA DATA
	ZIMMERMAN	BUNKER				
Discovery date .....	August 1961	June 1960				
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	3,890	3,425				
Flow pressure (psi) .....	2,250	2,250				
Bean size (in.) .....	9/32	1/4				
Initial reservoir pressure (psi) .....	2,930	2,975				
Reservoir temperature (°F) .....	145	145				
Initial oil content (STB/ac.-ft.) .....	1,000-1,600	1,100-1,600				
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Mokelumne River	Mokelumne River				
Geologic age .....	Late Cretaceous	Late Cretaceous				
Average depth (ft.) .....	6,780	6,845				
Average net thickness (ft.) .....	15	25				
Maximum productive area (acres) .....						720

**RESERVOIR ROCK PROPERTIES**

Porosity (%) .....	21-28	23-28				
So <sub>2</sub> (%) .....						
Sw <sub>j</sub> (%) .....	35-45	35-45				
Sg <sub>g</sub> (%) .....	55-65	55-65				
Permeability to air (md) .....	-	250				

**RESERVOIR FLUID PROPERTIES**

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.614	.614				
Heating value (Btu/cu. ft.) .....	1,075	1,075				
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

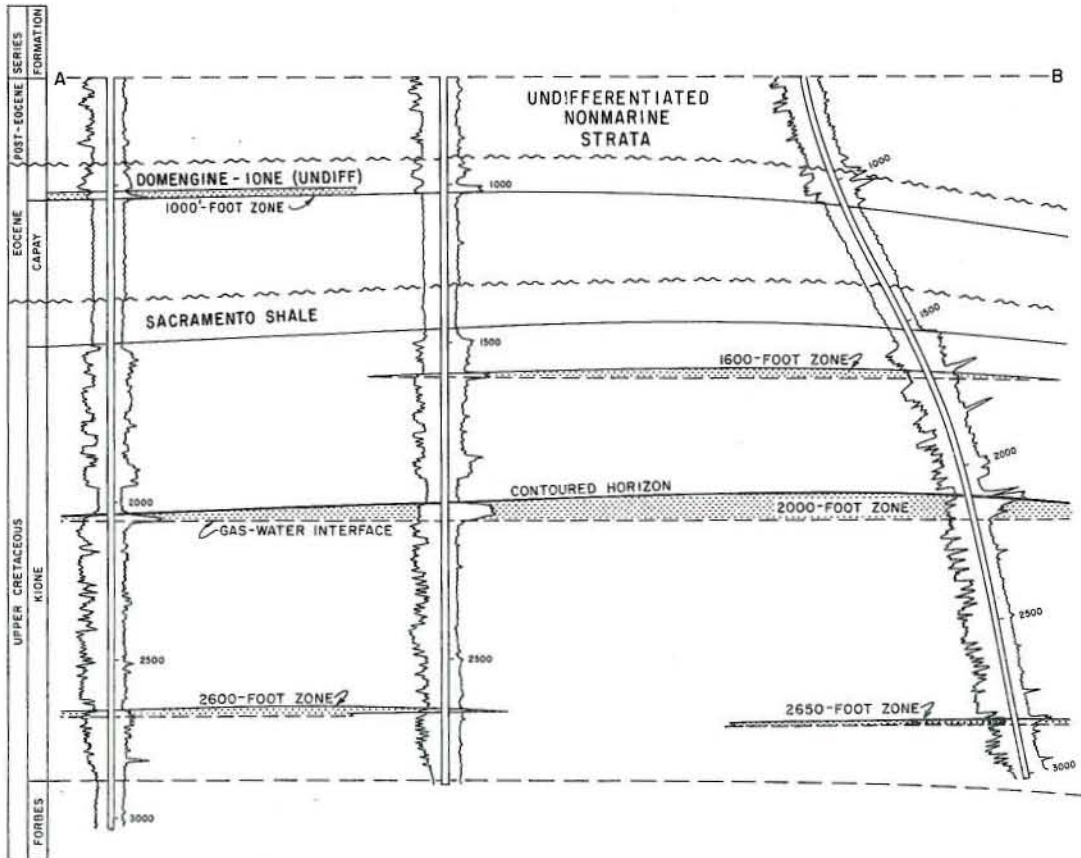
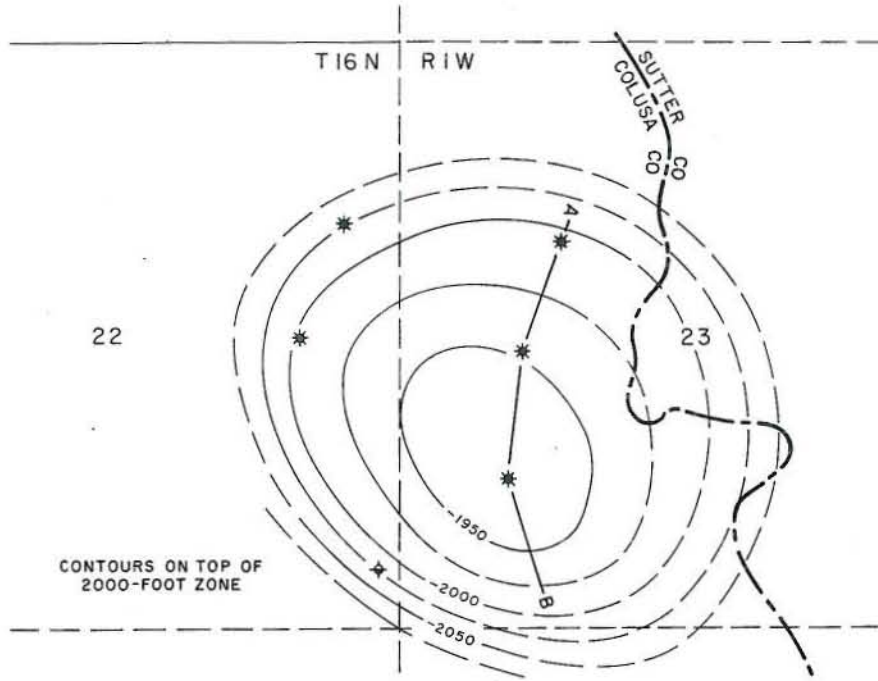
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						10,457,830
Year .....						1963

Base of fresh water (ft.): 2,500-3,100

Remarks:

Selected References: Hunter, W. J., 1961, Bunker Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 47, No. 1.

# BUTTE SINK GAS FIELD



COUNTY: COLUSA and SUTTER

**BUTTE SINK GAS FIELD**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Mobil Oil Corp. "Capital Co. Delta Farms" 1	G. E. Kadane & Sons "Capital Co." Delta Farms" 1	23 16N 1W	MD	6,998	2,000-ft. zone	Forbes
Deepest well	Same as above	"	"	"	"	2,600-ft. zone	Late Cretaceous

**POOL DATA**

ITEM	1,000-FOOT ZONE	1,600-FOOT ZONE	1,950-FOOT ZONE	2,000-FOOT ZONE	2,600-FOOT ZONE	2,650-FOOT ZONE
Discovery date .....	August 1962	August 1962	August 1963	July 1962	July 1962	September 1962
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	587	226	1,885	1,170	1,078	1,500
Flow pressure (psi) .....	475	691	790	760	700	1,050
Bean size (in.) .....	3/16	1/8	5/16	1/4	1/4	1/4
Initial reservoir pressure (psi) .....	460	735	930	935		1,220
Reservoir temperature (°F) .....	92	97	108	108	115	115
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	220	340	430	430	450	550
Formation .....	Domengine-Ione	Kione	Kione	Kione	Kione	Kione
Geologic age .....	Eocene	Late Cretaceous	Late Cretaceous	Late Cretaceous	Late Cretaceous	Late Cretaceous
Average depth (ft.) .....	1,000	1,600	1,950	2,000	2,600	2,650
Average net thickness (ft.) .....	10	20	20	80	20	15
Maximum productive area (acres) .....						a/
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	25*	25*	25*	25*	25*	25*
Soj (%) .....						
Swi (%) .....	35*	35*	35*	35*	35*	35*
Sgi (%) .....	65*	65*	65*	65*	65*	65*
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.605	.605	.605	.605	.605	.605
Heating value (Btu/cu. ft.) .....	907	926	-	829	824	807
Water:						
Salinity, NaCl (ppm) .....	7,000	7,000	7,000	7,000	7,000	7,000
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl) Year .....						
Peak gas production, net (Mcf) Year .....						b/

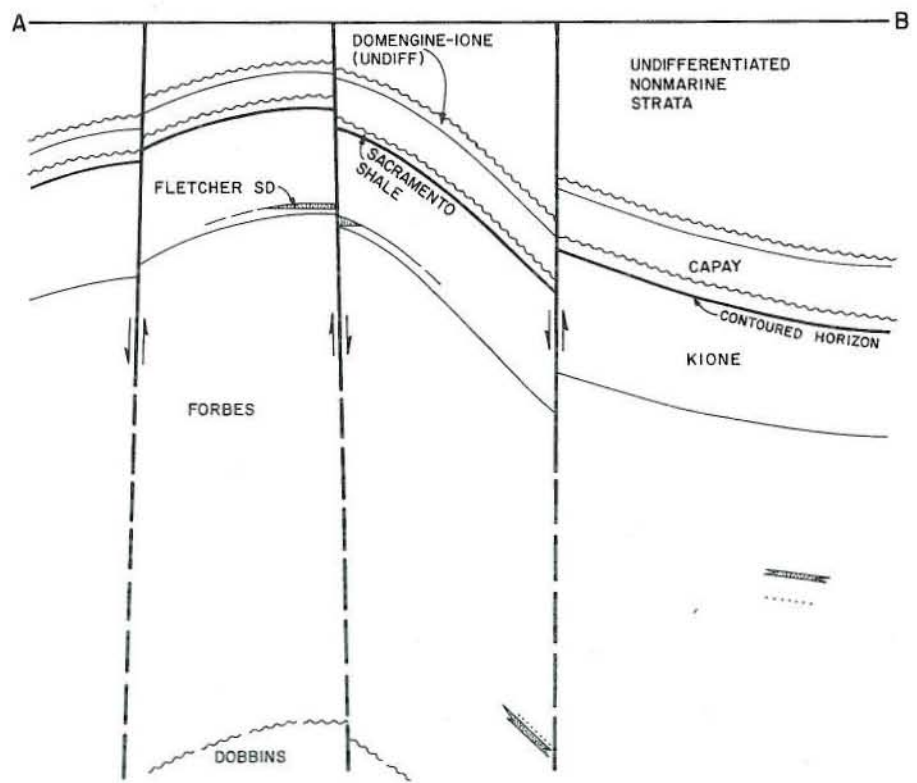
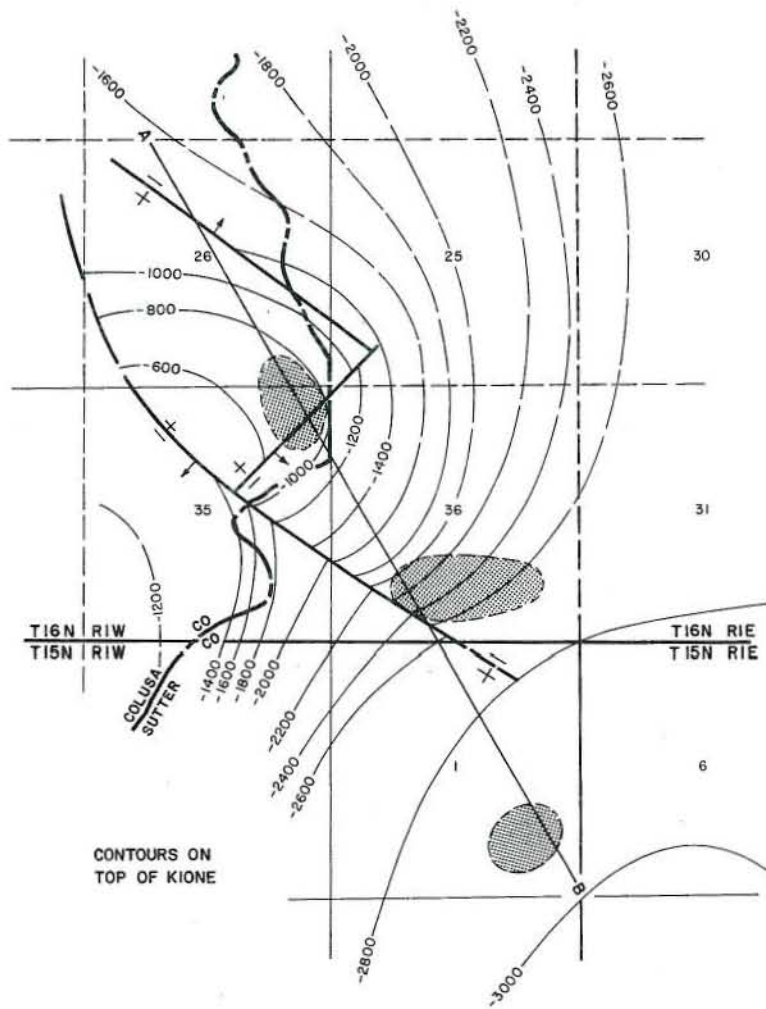
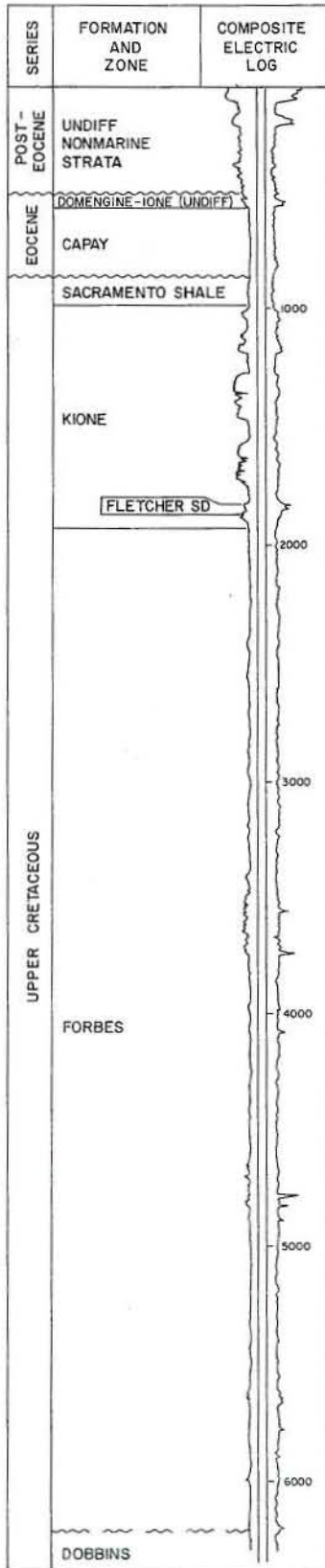
Base of fresh water (ft.): 400

Remarks:

- a/ Field productive area is 210 acres.
- b/ Peak gas production for the field was 604,197 Mcf in 1967.

Selected References: Hunter, W. J., 1963, Butte Sink Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 49, No. 2.

# BUTTE SLOUGH GAS FIELD



COUNTY: COLUSA and SUTTER

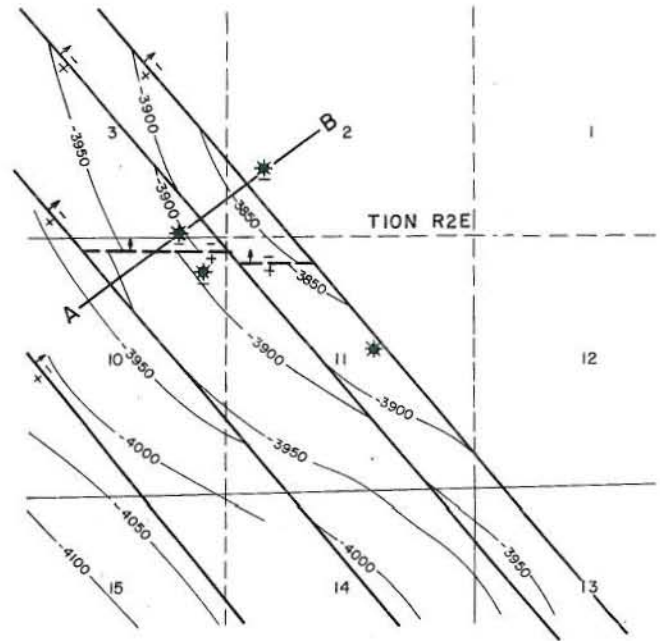
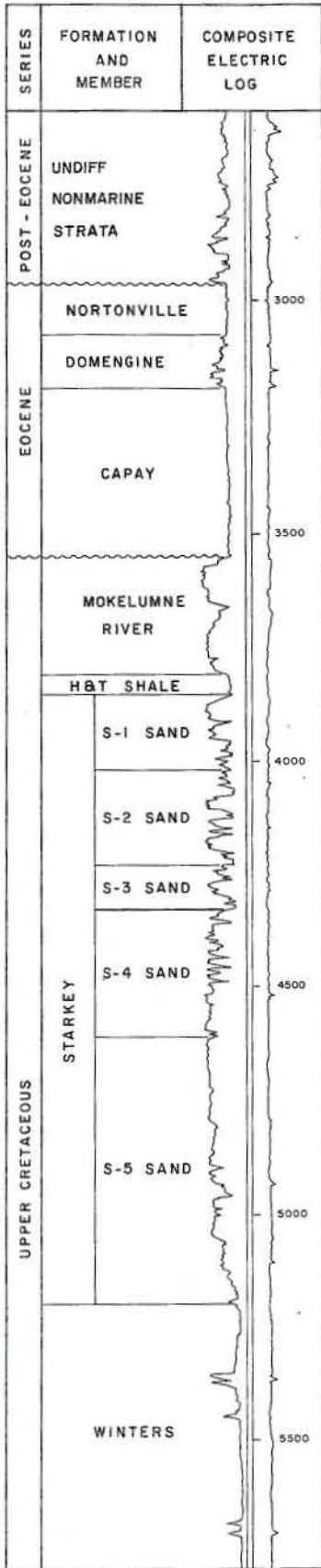
**BUTTE SLOUGH GAS FIELD**

**DISCOVERY WELL AND DEEPEST WELL**

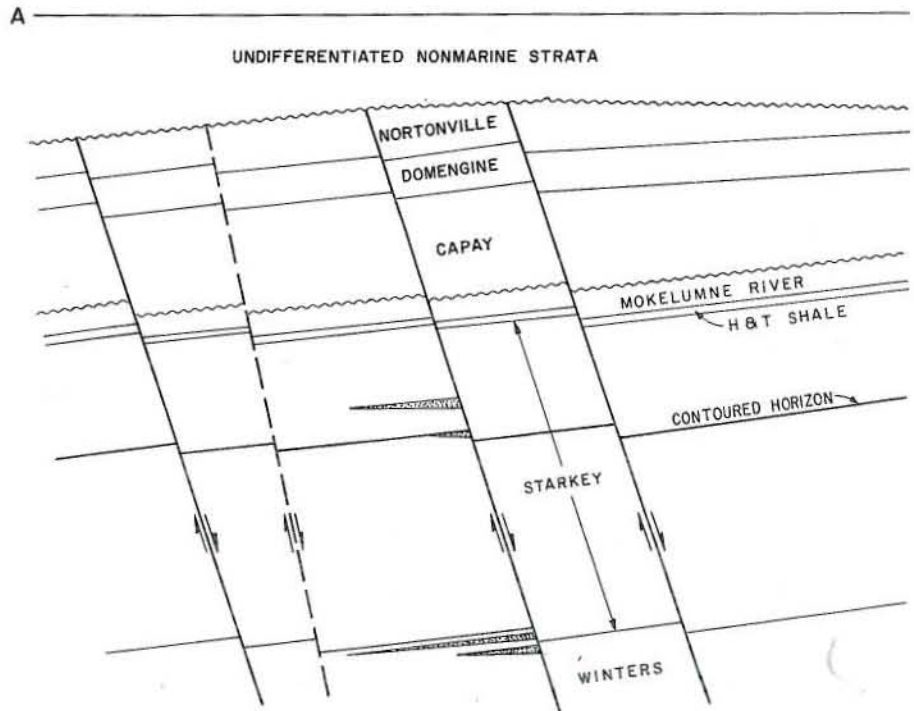
	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Mobil Oil Corp. "Belle Fletcher Hirst" 1	Humble Oil & Refining Co. "Belle Fletcher"	35 16N 1W	MD	2,077	Fletcher	
Deepest well	Atlantic Oil Co. "Scott-Straub" 1	3 Same as present	1 15N 1W	MD	8,042		Forbes Late Cretaceous

ITEM	POOL DATA				FIELD OR AREA DATA
	FLETCHER	UNNAMED			
Discovery date .....	October 1955	September 1962			
Initial production rates					
Oil (bbl/day) .....		1,700			
Gas (Mcf/day) .....	478	800			
Flow pressure (psl) .....	635				
Bean size (in.) .....	3/16	5/16			
Initial reservoir pressure (psi) .....	835	3,250-5,000			
Reservoir temperature (°F) .....	90	120-138			
Initial oil content (STB/ac-ft.) .....		640-1,700			
Initial gas content (MSCF/ac.-ft.) .....	420	Forbes			
Formation .....	Kione	Late Cretaceous			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	1,815	5,700-7,270			
Average net thickness (ft.) .....	35	6-80			
Maximum productive area (acres) .....					240
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	25*	15-20***			
So <sub>i</sub> (%) .....					
Sw <sub>i</sub> (%) .....	35*	45-50***			
Sg <sub>i</sub> (%) .....	65*	50-55***			
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution					
GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.569	.569			
Heating value (Btu/cu. ft.) .....	970	930-990			
Water:					
Salinity, NaCl (ppm) .....	2,300-22,300	-			
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					1,553,025
Year .....					1962
Base of fresh water (ft.):	200				
Remarks:					
Selected References:					

# CACHE CREEK GAS FIELD



CONTOURS ON TOP OF S-4 SAND



COUNTY: YOLO

CACHE CREEK GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron USA, Inc. "E. A. Payne et al" 1-11	Champlin Petroleum Corp. "E. A. Payne et al" 1-11	11 10N 2E	MD	10,990	Starkey	Dobbins Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	POOL DATA				FIELD OR AREA DATA
	STARKEY	WINTERS			
Discovery date .....	August 1977	March 1979			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	1,355	1,500			
Flow pressure (psi) .....	955	1,760			
Bean size (in.) .....	1/4	1/2			
Initial reservoir pressure (psi) .....	1,141	1,994			
Reservoir temperature (*F) .....	125	130			
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	500-660	690-950			
Formation .....	Starkey	Winters			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	3,924	5,000			
Average net thickness (ft.) .....	3				
Maximum productive area (acres) .....					160

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	28-34†	22-28†			
Soj (%) .....					
Swj (%) .....	40-45†	40-45†			
Sgj (%) .....	55-60†	55-60†			
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (*API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ *F .....					
Gas:					
Specific gravity (air = 1.0) .....	.602	.630			
Heating value (Btu/cu. ft.) .....	895	831			
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
Rw (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

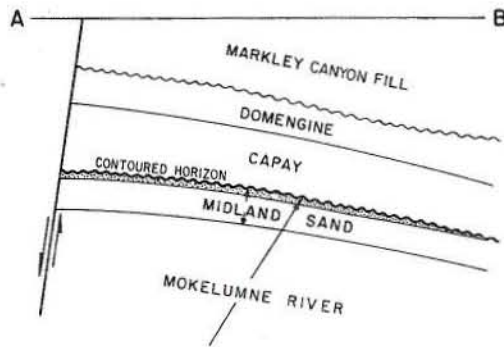
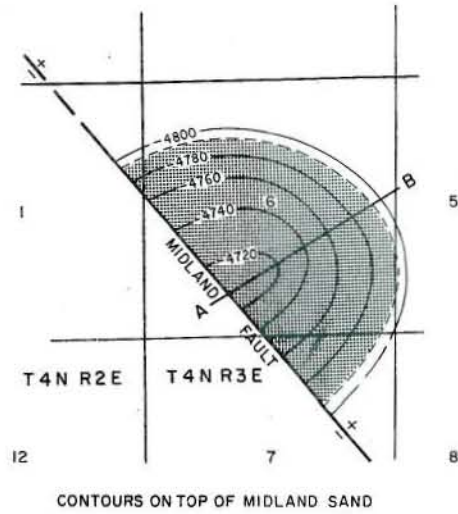
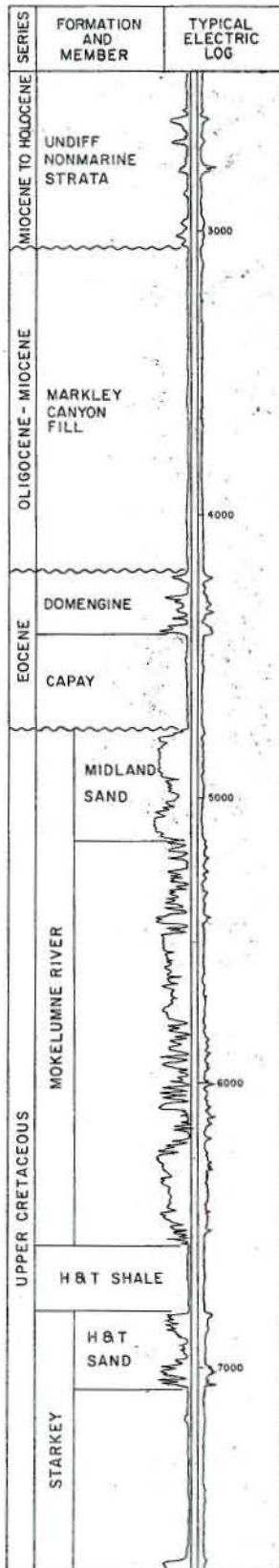
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					

Base of fresh water (ft.):

Remarks: Waiting on pipeline hookup.

Selected References:

# CACHE SLOUGH GAS FIELD





COUNTY: SOLANO

CACHE SLOUGH GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron USA Inc. "California Packing Corporation" 2	Standard Oil Company of Calif. "California Packing Corporation" 2	6 4N 3E	MD	4,840	Midland	
Deepest well	Chevron USA Inc. "Peter Cook" 12	Standard Oil Company of Calif. "Peter Cook" 12	6 4N 3E	MD	7,730		Starkey Late Cretaceous

POOL DATA

ITEM			FIELD OR AREA DATA		
	MIDLAND	UNNAMED			
Discovery date .....	March 1945	July 1960			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	14,867	3,850			
Flow pressure (psi) .....	1,697	1,811			
Bean size (in.) .....	5/8	5/16			
Initial reservoir pressure (psi) .....	2,120	2,235			
Reservoir temperature (°F) .....	120	130			
Initial oil content (STB/ac.-ft.) .....	1,400	1,000-1,300			
Initial gas content (MSCF/ac.-ft.) .....					
Formation .....	Mokelumne River	Mokelumne River			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	4,730	5,335			
Average net thickness (ft.) .....	35	5			
Maximum productive area (acres) .....					340

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	33	25-30***			
So <sub>i</sub> (%) .....	35	35-40***			
Sw <sub>i</sub> (%) .....	65	60-65***			
Sg <sub>i</sub> (%) .....					
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.570 ††	.598 ††			
Heating value (Btu/cu. ft.) .....	1,000	937			
Water:					
Salinity, NaCl (ppm) .....	18,000	15,200			
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

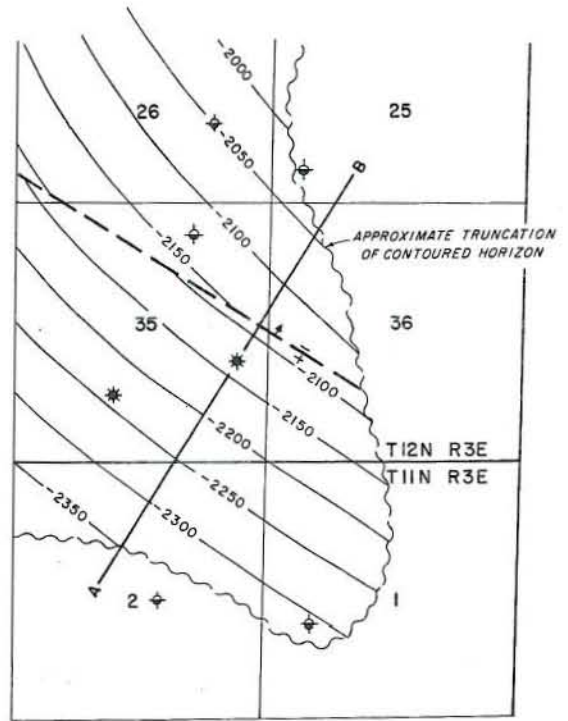
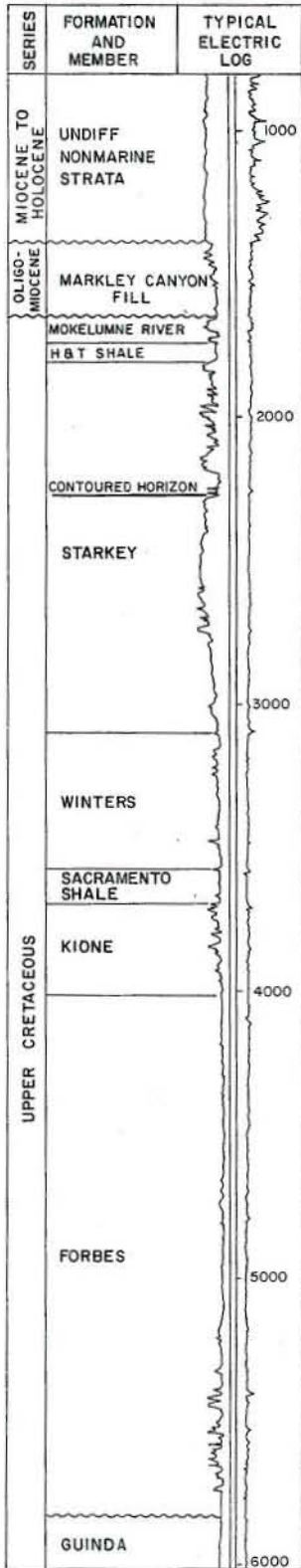
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					2,558,328
Year .....					1948

Base of fresh water (ft.): 2,000-2,300

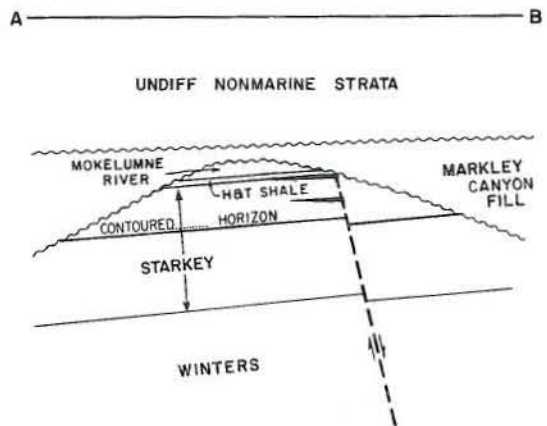
Remarks: Commercial gas deliveries began in December 1947 and ceased in October 1962. Seven wells were completed and cumulative gas production was 11,554,000 Mcf. The field was reactivated in July 1978 and produced an additional 317,146 Mcf of gas prior to abandonment in November 1980.

Selected References:

# CATLETT GAS FIELD



CONTOURS ON STARKEY MARKER



COUNTY: SUTTER

CATLETT GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Davis Oil Co. "Aileen Marty" 1	Same as present	35 12N 3E	MD	6,649	Starkey	Forbes Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

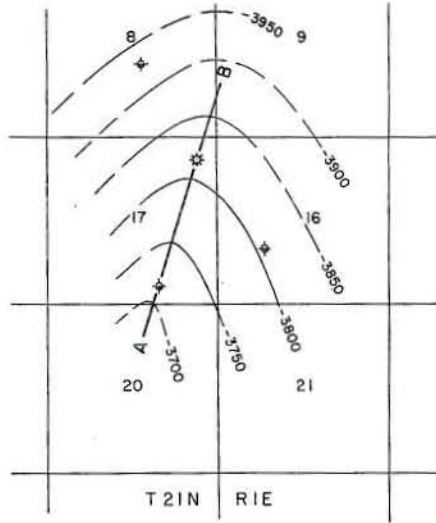
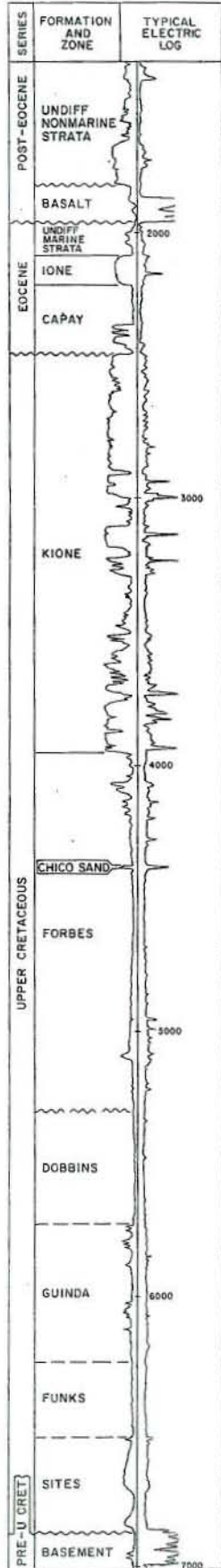
ITEM	POOL DATA					FIELD OR AREA DATA
	STARKEY					
Discovery date .....	December 1977					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,132					
Flow pressure (psi) .....	793					
Bean size (in.) .....	1/4					
Initial reservoir pressure (psi) .....	1,000					
Reservoir temperature (°F) .....	93					
Initial oil content (STB/ac-ft.) .....	480-600					
Initial gas content (MSCF/ac-ft.) .....	Starkey					
Formation .....	Late Cretaceous					
Geologic age .....	2,250					
Average depth (ft.) .....	10					
Average net thickness (ft.) .....	120					
Maximum productive area (acres) .....						
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	29-33 †					
So <sub>v</sub> (%) .....	40-45 †					
Sw <sub>i</sub> (%) .....	55-60 †					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.676					
Heating value (Btu/cu. ft.) .....	718					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 1,400

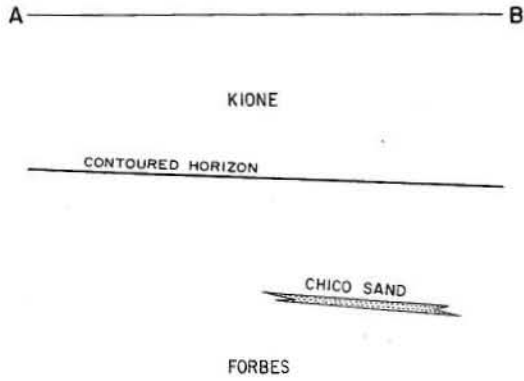
Remarks: Commercial gas deliveries have not yet begun.

Selected References:

# CHICO GAS FIELD (Abandoned)



CONTOURS ON TOP OF FORBES



COUNTY: BUTTE

CHICO GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Buttes Resources Company "Estes" 1	Richfield Oil Corp. "Chico" 1	17 21N 1E	MD	7,005	Chico	Forbes Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

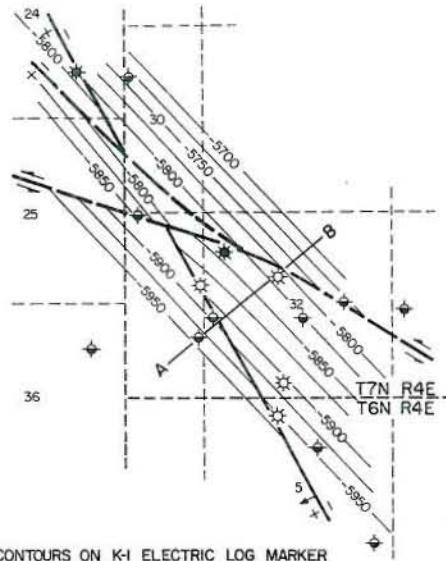
ITEM	CHICO				FIELD OR AREA DATA
Discovery date .....	January 1944				
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	2,070				
Flow pressure (psi) .....	1,470				
Bean size (in.) .....	17/64				
Initial reservoir pressure (psi) .....	1,630				
Reservoir temperature (°F) .....	122				
Initial oil content (STB/ac.-ft.) .....	530-730				
Initial gas content (MSCF/ac.-ft.) .....	Forbes				
Formation .....	Late Cretaceous				
Geologic age .....	4,365				
Average depth (ft.) .....	20				
Average net thickness (ft.) .....	160				
Maximum productive area (acres) .....					
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	20-25***				
So <sub>i</sub> (%) .....					
Sw <sub>i</sub> (%) .....	40-45***				
Sg <sub>i</sub> (%) .....	55-60***				
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.615 ††				
Heating value (Btu/cu. ft.) .....	865				
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbbl)					
Year .....					
Peak gas production, net (Mcf)	221,381				
Year .....	1947				

Base of fresh water (ft.): 1,400

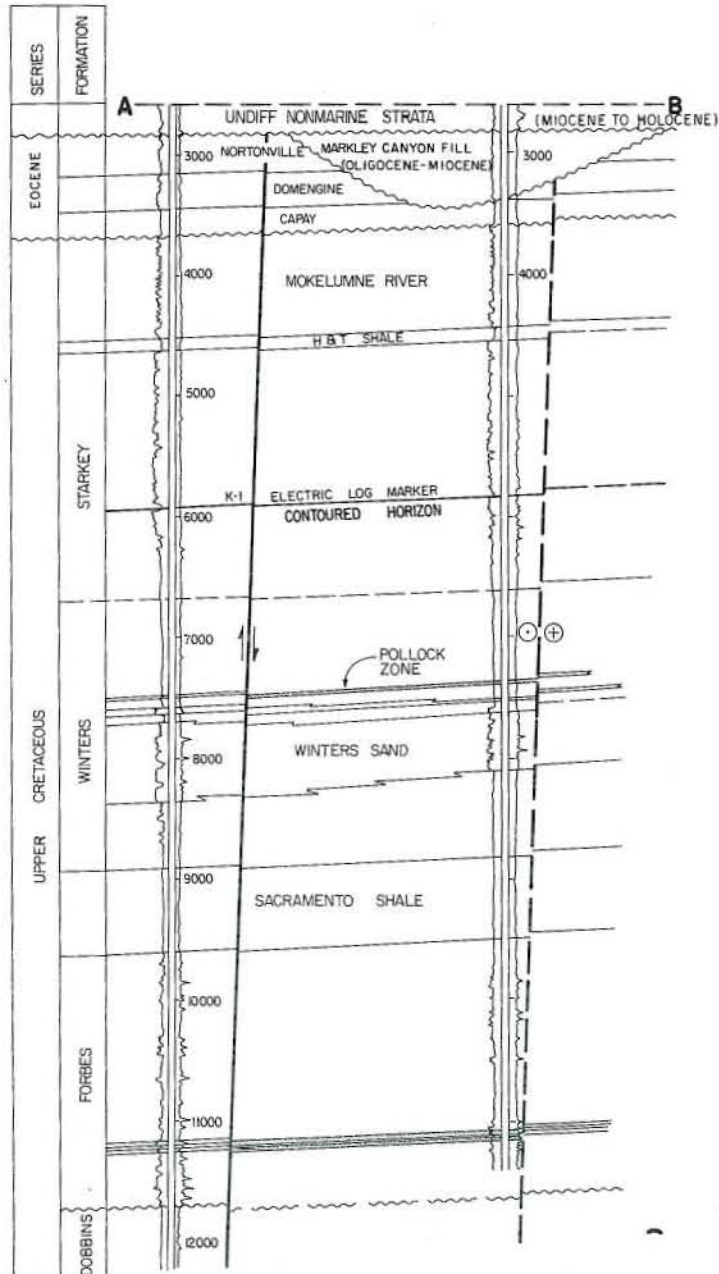
Remarks: Commercial gas deliveries began in September 1946 and ceased in October 1973. The field was abandoned in August 1975. Only one well was completed and cumulative gas production was 1,541,924 Mcf.

Selected References:

# CLARKSBURG GAS FIELD



CONTOURS ON K-1 ELECTRIC LOG MARKER



COUNTY: YOLO

CLARKSBURG GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Occidental Petroleum Corp. "Pollock Unit" 1	Same as present	5 6N 4E	MD	11,648	Pollock	
Deepest well	Union Oil Co. of Calif. "Union-Dow Standard Community 1" 1	Same as present	31 7N 4E	MD	12,235		Dobbins Late Cretaceous

POOL DATA

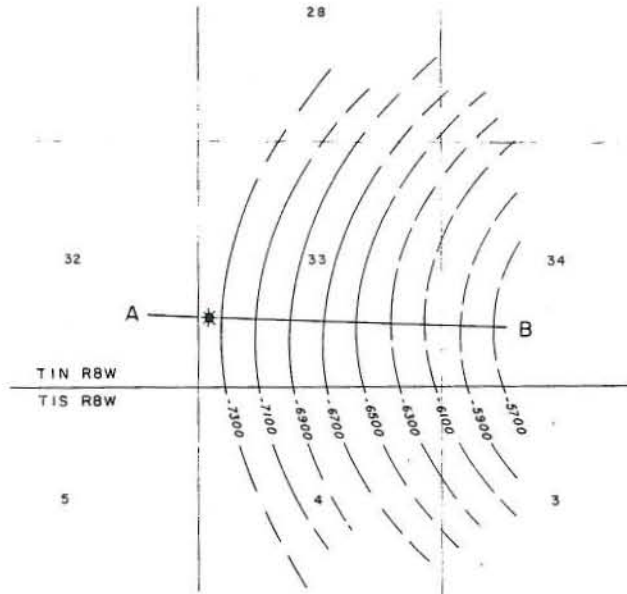
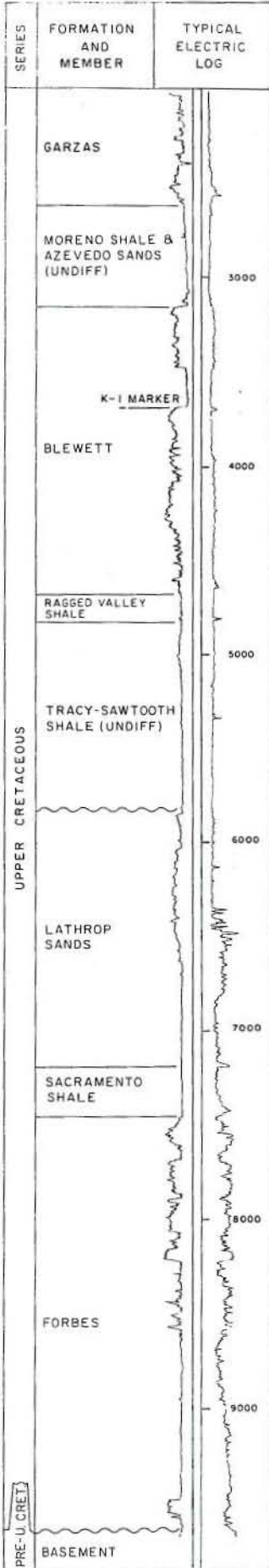
ITEM	POLLOCK	FORBES (abd.)				FIELD OR AREA DATA
Discovery date .....	July 1963	June 1966				
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	14,300	1,122				
Flow pressure (psi) .....	1,110	2,110				
Bean size (in.) .....	3/4	10/64				
Initial reservoir pressure (psi) .....	3,360	5,109				
Reservoir temperature (°F) .....	155	182				
Initial oil content (STB/ac.-ft.) .....	1,800	1,000				
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Winters	Forbes				
Geologic age .....	Late Cretaceous	Late Cretaceous				
Average depth (ft.) .....	7,450	11,100				
Average net thickness (ft.) .....	20	50				
Maximum productive area (acres) .....						480
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	28	22				
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	30	40				
Sg <sub>j</sub> (%) .....	70	60				
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.607	.610				
Heating value (Btu/cu. ft.) .....	930	894				
Water:						
Salinity, NaCl (ppm) .....	12,200	11,500				
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						686,595
Year .....						1966
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 2,100

Remarks: Commercial gas deliveries began in January 1966. Production from the Forbes ceased in April 1973. The zone was abandoned in July 1967. Only one well had been completed in the Forbes and cumulative production was 119,580 Mcf.

Selected References: Lorshbough, A. L., 1966, Clarksburg Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 55, No. 1.

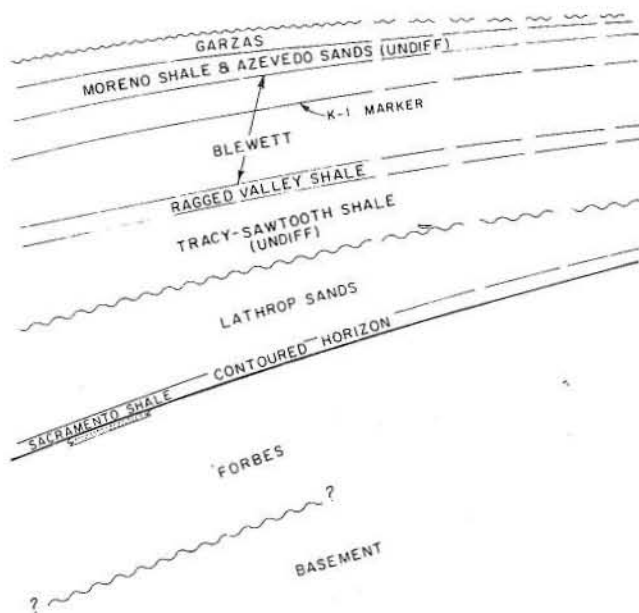
# EAST COLLEGEVILLE GAS FIELD



CONTOURS ON TOP OF FORBES

A ————— B

UNDIFFERENTIATED NONMARINE STRATA





COUNTY: SAN JOAQUIN

COLLEGEVILLE, EAST, GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron U.S.A. Inc. "Texaco-Chevron-Franzia Bros." 1-33	Champlin Petroleum Co. "Texaco-Chevron-Franzia Bros." 1-33	33 IN SE	MD	9,657	Forbes	pre-Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

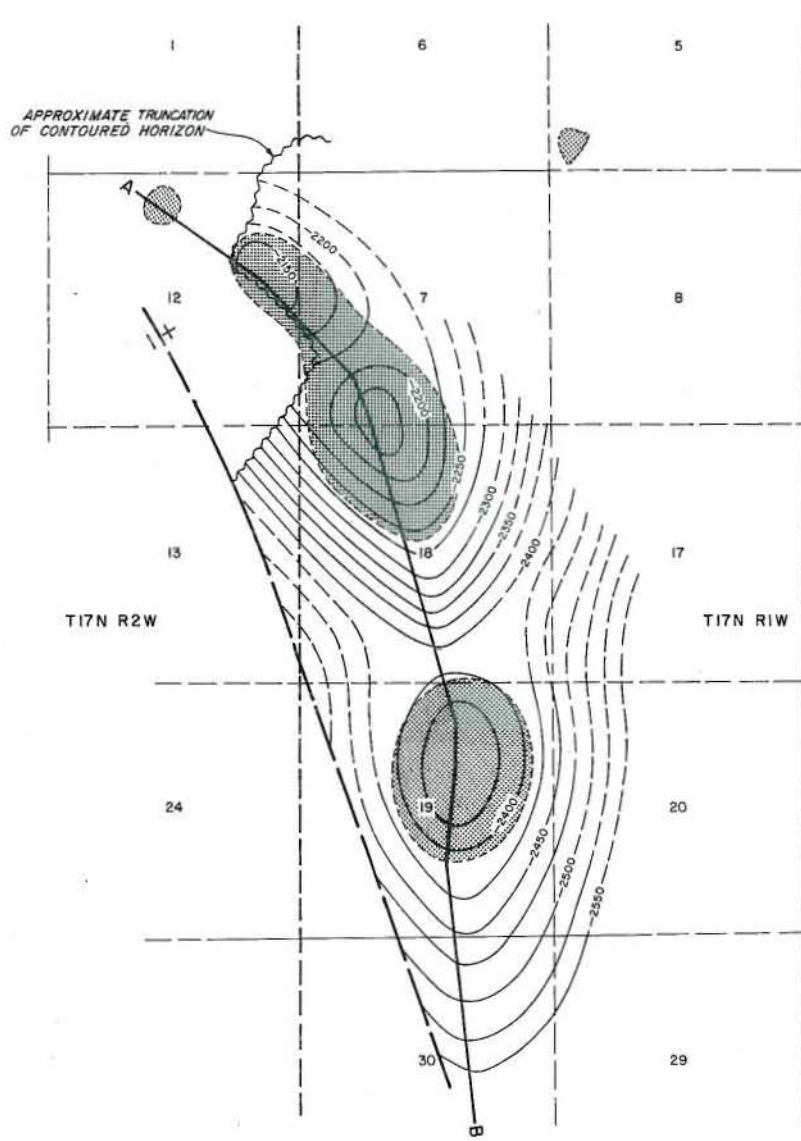
ITEM	FORBES					FIELD OR AREA DATA
Discovery date .....	September 1978					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	454					
Flow pressure (psi) .....	717					
Bean size (in.) .....	8/64					
Initial reservoir pressure (psi) .....	2,850					
Reservoir temperature (°F) .....	144					
Initial oil content (STB/ac.-ft.) .....	770					
Initial gas content (MSCF/ac.-ft.) .....	Forbes					
Formation .....	Late Cretaceous					
Geologic age .....	7,455					
Average depth (ft.) .....	25					
Average net thickness (ft.) .....	50					
Maximum productive area (acres) .....						
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	20					
S <sub>oi</sub> (%) .....	50**					
S <sub>wi</sub> (%) .....	50**					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.662					
Heating value (Btu/cu. ft.) .....	756					
Water:						
Salinity, NaCl (ppm) .....	24,000					
T.D.S. (ppm) .....	26,200					
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl) Year .....						
Peak gas production, net (Mcf) Year .....						

Base of fresh water (ft.): 1,000±

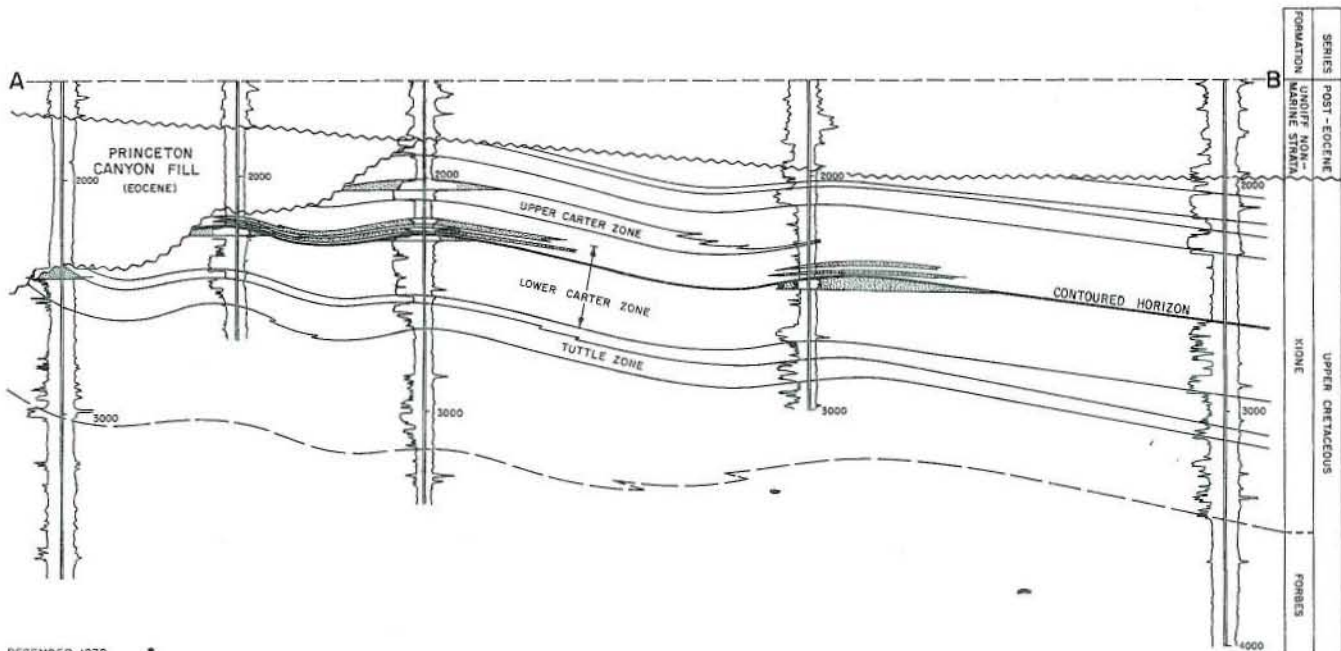
Remarks: Commercial gas deliveries have not yet begun.

Selected References:

# COMPTON LANDING GAS FIELD



CONTOURS ON TOP OF MAIN CARTER SAND



COUNTY: COLUSA

COMPTON LANDING GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Exxon Corp. "Tuttle Unit 1" 1	Honolulu Oil Corp. "Honolulu-Humble Tuttle Unit" 1	12 17N 2W	MD	3,700	Tuttle	
Deepest well	Aminoil USA, Inc. "Forry" 1	Signal Oil & Gas Co. "Forry" 1	30 17N 1W	MD	10,777		Venado Late Cretaceous

POOL DATA

ITEM	UPPER CARTER	LOWER CARTER	CATFISH	TUTTLE	UNNAMED	FIELD OR AREA DATA
Discovery date .....	November 1955	November 1955	September 1960	July 1955	July 1963	
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,470	1,650	5,130	1,400	1,270	
Flow pressure (psi) .....	800	860	830	990	800	
Bean size (in.) .....	20/64	20/64	32/64	16/64	13/64	
Initial reservoir pressure (psi) .....	860	950	980	1,015	4,450	
Reservoir temperature (°F) .....	94	96	100	105	151	
Initial oil content (STB/ac.-ft.) .....	600	600-670	650	640	1,500	
Formation .....	Kione	Kione	Kione	Kione	Forbes	
Geologic age .....	Late Cretaceous	Late Cretaceous	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	2,020	2,190	2,310	2,550	6,260	
Average net thickness (ft.) .....	40	60	20	40	15	
Maximum productive area (acres) .....						440

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	30*	28-31	30*	28*	20-24***	
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	25*	25	25*	25*	45-50***	
Sg <sub>i</sub> (%) .....	75*	75	75*	75*	50-55***	
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.604	.604		.59	-	
Heating value (Btu/cu. ft.) .....	810	797-824		921	800	
Water:						
Salinity, NaCl (ppm) .....	12,000	12,000	17,600	12,000	12,000	
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

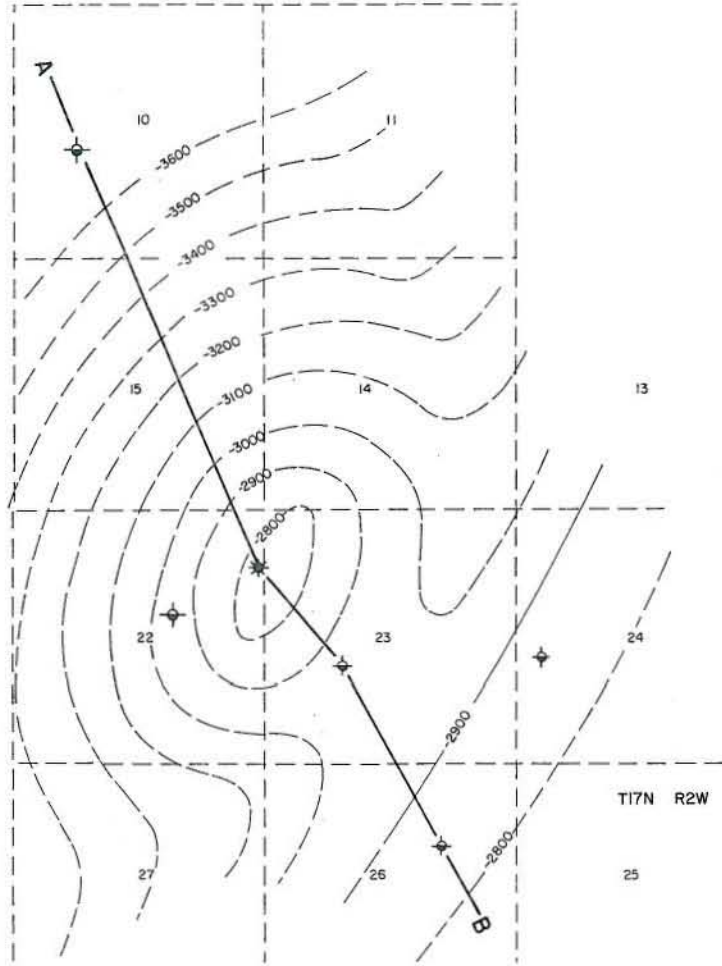
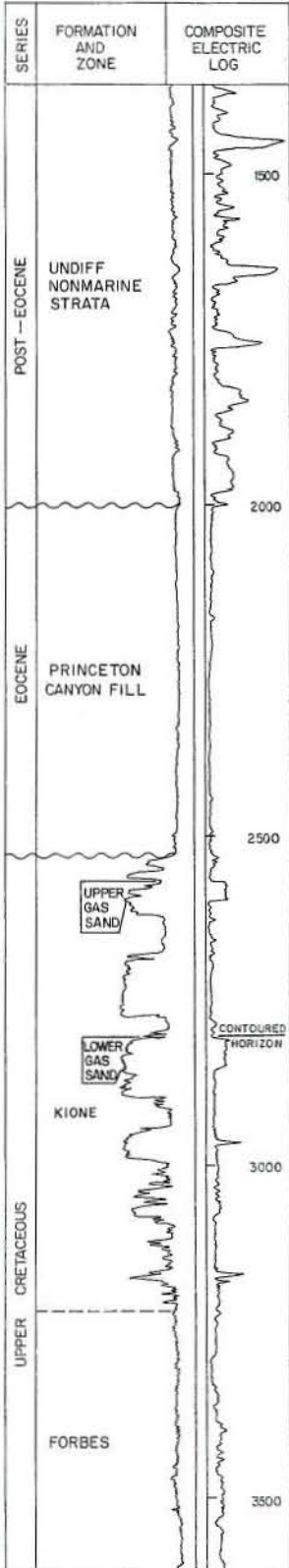
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						1,089,651
Year .....						1960

Base of fresh water (ft.): 1,300

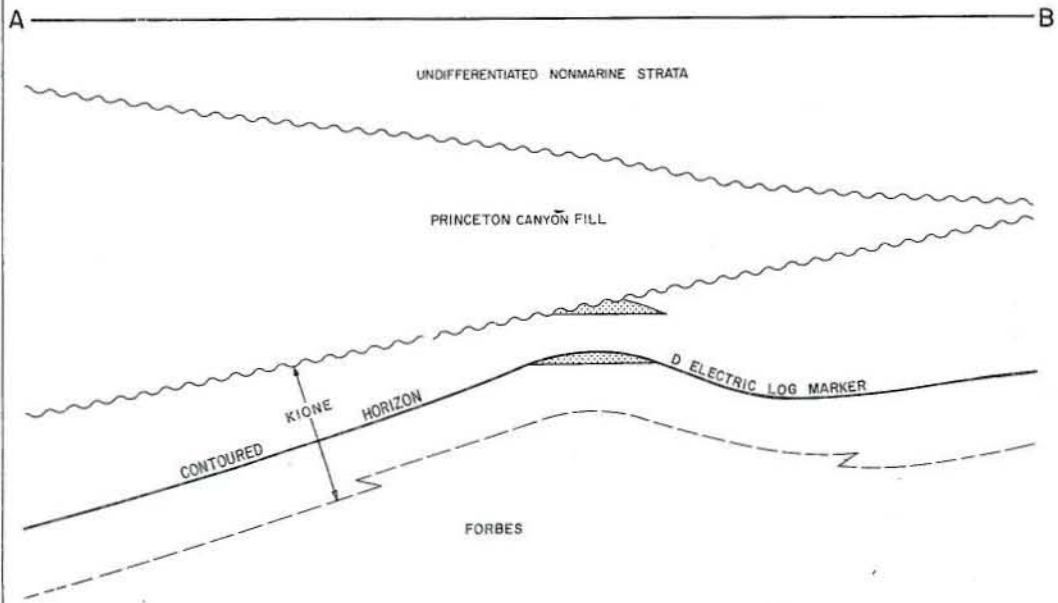
Remarks:

Selected References: Bruce, Donald D., 1958, Compton Landing Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 44, No. 2.

# SOUTH COMPTON LANDING GAS FIELD



CONTOURS ON D ELECTRIC LOG MARKER



COUNTY: COLUSA

COMPTON LANDING, SOUTH, GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "Transamerica" 1-22	Same as present	22 17N 2W	MD	3,900	unnamed	Kione Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

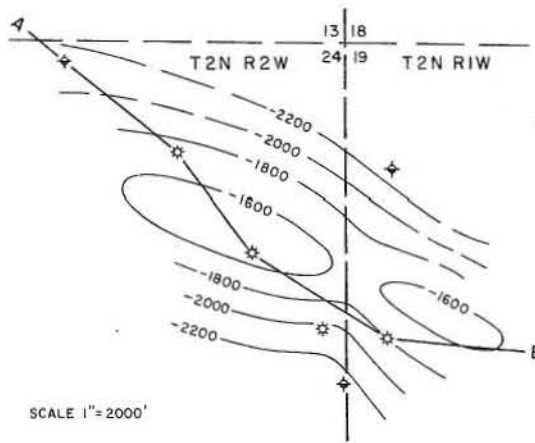
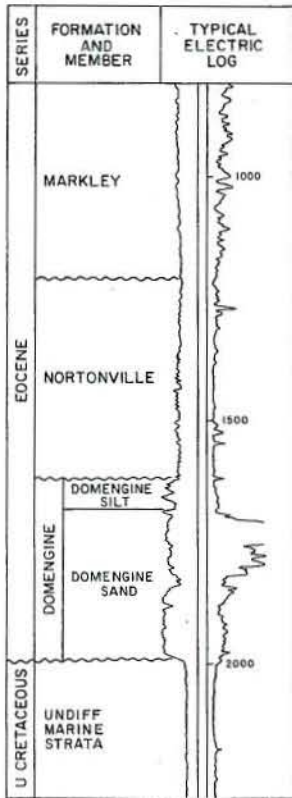
ITEM	POOL DATA				FIELD OR AREA DATA
	UNNAMED	UNNAMED			
Discovery date .....	January 1976	January 1976			
Initial production rates					
Oil (bbl/day) .....		8,500			
Gas (Mcf/day) .....	1,000	1,150			
Flow pressure (psi) .....					
Bean size (in.) .....					
Initial reservoir pressure (psi) .....	1,180	1,270			
Reservoir temperature (°F) .....	104	106			
Initial oil content (STB/ac.-ft.) .....	590	630			
Initial gas content (MSCF/ac.-ft.) .....	Kione	Kione			
Formation .....	Late Cretaceous	Late Cretaceous			
Geologic age .....	2,600	2,850			
Average depth (ft.) .....	50	15			
Average net thickness (ft.) .....					
Maximum productive area (acres) .....					40
RESERVOIR ROCK PROPERTIES					
Porosity (%) .....	25-27***	25-27***			
So <sub>g</sub> (%) .....	33***	33***			
Sw <sub>g</sub> (%) .....	67***	67***			
Permeability to air (md) .....					
RESERVOIR FLUID PROPERTIES					
Oil:					
Oil gravity (*API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.633	.643			
Heating value (Btu/cu. ft.) .....	797	780			
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
ENHANCED RECOVERY PROJECTS					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbi)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					137,138 1979

Base of fresh water (ft.): 1,600

Remarks: In April 1980, Chevron U.S.A. Inc. completed well "Jimeno Rancho" 1, in Sec. 14, T. 17N, R. 2W, M.D.B. & M., opposite the Forbes Formation (Late Cretaceous) as a new pool discovery.

Selected References:

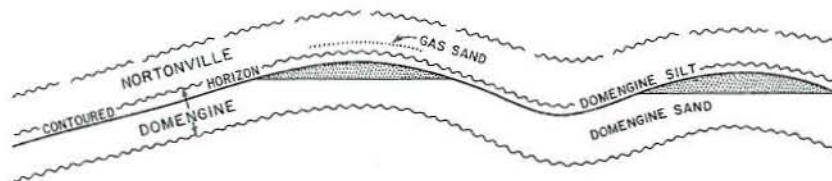
# CONCORD GAS FIELD (Abandoned)



CONTOURS ON TOP OF DOMENGINE SAND

A ————— B

MARKLEY



UNDIFFERENTIATED MARINE STRATA

COUNTY: CONTRA COSTA

CONCORD GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron U.S.A. Inc. "Boylan" 1	Standard Oil Company of California "Boylan" 1	24 2N 2W	MD	4,442	Nortonville & Domengine <sup>a/</sup>	G- or H-zone Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	NORTONVILLE		DOMENGINE		FIELD OR AREA DATA
Discovery date .....	December 1962	December 1962			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	1,950	2,725			
Flow pressure (psi) .....	724	780			
Bean size (in.) .....	19/64	3/8			
Initial reservoir pressure (psi) .....	1,240	1,200			
Reservoir temperature (°F) .....	81-83	82-88			
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	690	640-890			
Formation .....	Nortonville	Domengine			
Geologic age .....	Eocene	Eocene			
Average depth (ft.) .....	1,650-1,800	1,750-2,250			
Average net thickness (ft.) .....	5-15	15-50			
Maximum productive area (acres) .....					160

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	26*	25-30***			
So <sub>1</sub> (%) .....					
Sw <sub>1</sub> (%) .....	35*	25-35***			
Sg <sub>1</sub> (%) .....	65*	65-75***			
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.567††	.570††			
Heating value (Btu/cu. ft.) .....	990	980			
Water:					
Salinity, NaCl (ppm) .....	2,910	11,810			
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

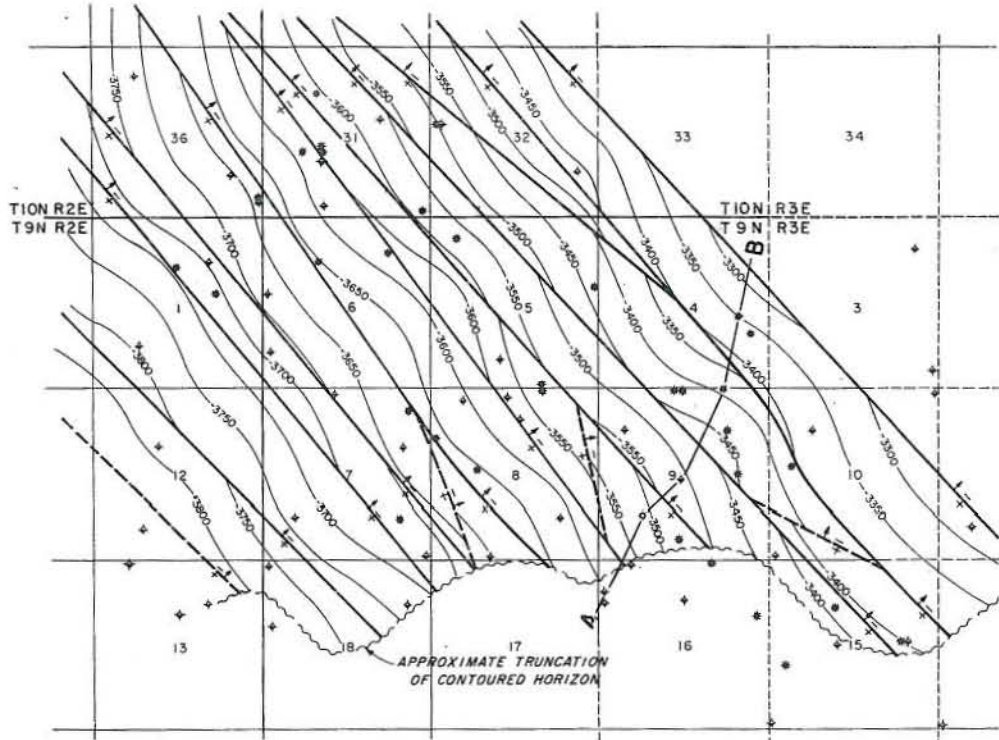
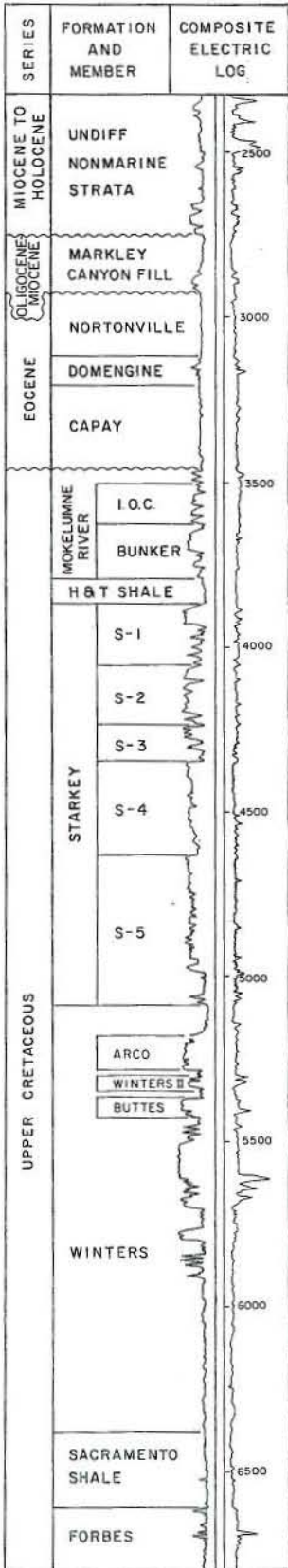
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					958,823
Year .....					1964

Base of fresh water (ft.): Above 500

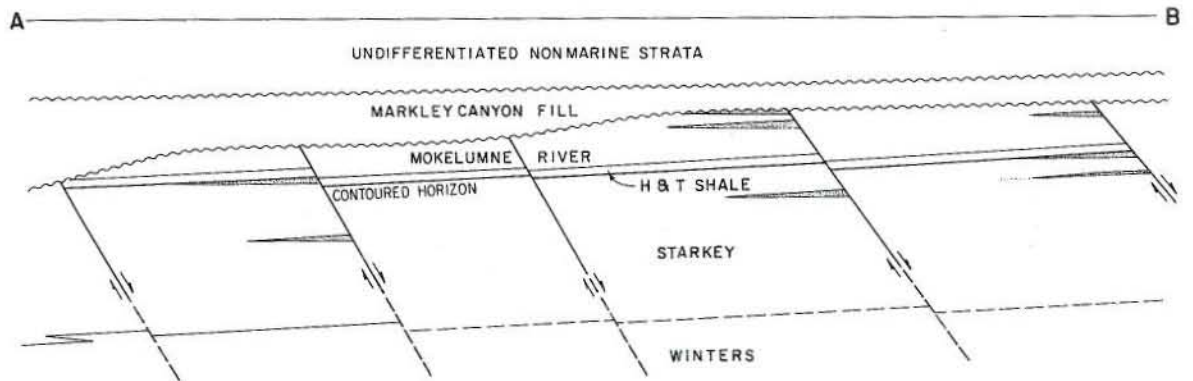
Remarks: Commercial gas deliveries began in March 1963 and ceased in June 1968. The field was abandoned in September 1969. Four wells were completed and cumulative gas production was 3,068,869 Mcf.  
<sup>a/</sup> Dual completion.

Selected References:

# CONWAY RANCH GAS FIELD



CONTOURS ON TOP OF STARKEY





COUNTY: YOLO

CONWAY RANCH GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Atlantic Oil Co. "I.O.C." 2	Same as present	8 9N 3E	MD	4,806	Starkey	
Deepest well	Buttes Resources Co. "Humble-Investment Opr., Inc." 2	Same as present	1 9N 2E	MD	6,700		Forbes Late Cretaceous

POOL DATA

ITEM	POOL DATA			FIELD OR AREA DATA
	MOKELUMNE RIVER	STARKEY	WINTERS	
Discovery date .....	June 1973	July 1972	June 1974	
Initial production rates				
Oil (bbl/day) .....	5,310	6,600	5,750	
Gas (Mcf/day) .....	1,110	1,425-1,500	1,710	
Flow pressure (psi) .....	Variable	21/64	6/16	
Bean size (in.) .....				
Initial reservoir pressure (psi) .....	1,340	1,762	2,580	
Reservoir temperature (°F) .....	99	107	118	
Initial oil content (STB/ac.-ft.) .....	540-790	760-1,100	860-1,300	
Initial gas content (MSCF/ac.-ft.) .....	Mokelumne River	Starkey	Winters	
Formation .....	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Geologic age .....	2,850-3,100	3,300-4,300	5,150-5,300	
Average depth (ft.) .....	0-80	0-60	0-50	
Average net thickness (ft.) .....				
Maximum productive area (acres) .....	385	880	220	

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	24-30†	26-32†	22-28†	
Soj (%) .....				
Swi (%) .....	35-45†	35-45†	35-45†	
Sgi (%) .....	55-65†	55-65†	55-65†	
Permeability to air (md) .....				

RESERVOIR FLUID PROPERTIES

<b>Oil:</b>				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
<b>Gas:</b>				
Specific gravity (air = 1.0) .....	.660	.650	.658	
Heating value (Btu/cu. ft.) .....	758	779	762	
<b>Water:</b>				
Salinity, NaCl (ppm) .....				
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				

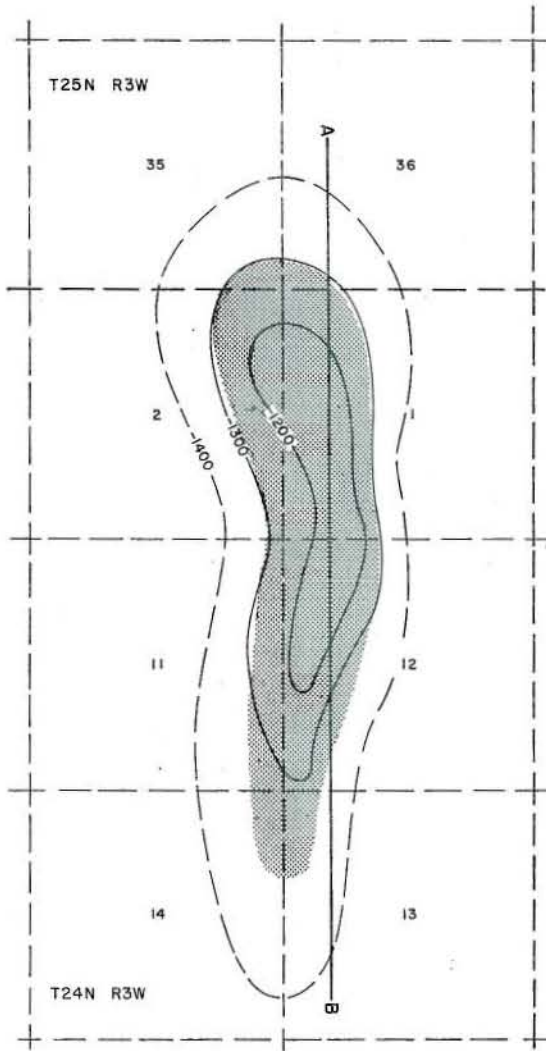
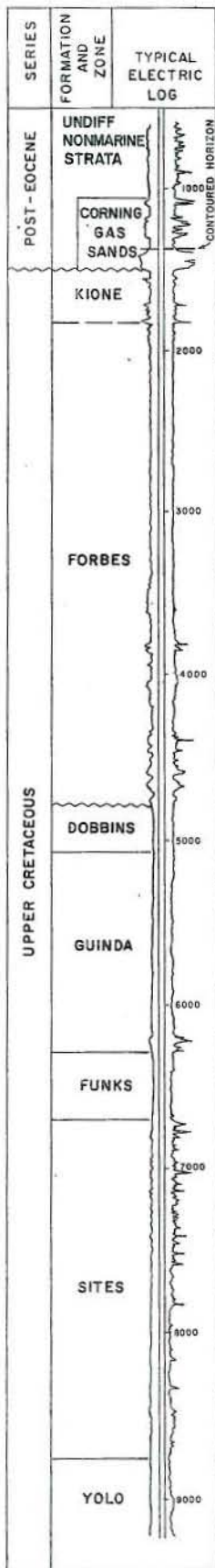
Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				3,824,342
Year .....				1975

Base of fresh water (ft.): 2,200-2,600

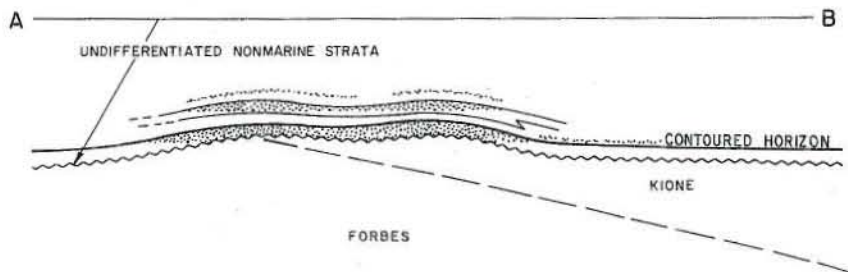
Remarks:

Selected References: Campion, J. T., Jr., 1980, Conway Ranch Gas Field: Calif. Div. of Oil and Gas Publication TR24, p. 1-13.

# CORNING GAS FIELD



CONTOURS ON TOP OF LOWER GAS SAND



COUNTY: TEHAMA

CORNING GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	The Superior Oil Co. "Saldubehere" 1	Same as present	12 24N 3W	MD	9,225	Corning Sands	Yolo Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	CORNING SANDS					FIELD OR AREA DATA
Discovery date .....	October 1959					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	17,676					
Flow pressure (psi) .....	380					
Bean size (in.) .....	1					
Initial reservoir pressure (psi) .....	415-645					
Reservoir temperature (°F) .....	90-96					
Initial oil content (STB/ac.-ft.) .....	300-380					
Initial gas content (MSCF/ac.-ft.) .....	undiff. nonmarine					
Formation .....	post-Eocene					
Geologic age .....	980-1,450					
Average depth (ft.) .....	5-120					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	660					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	29-33					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	25-30					
Sg <sub>g</sub> (%) .....	70-75					
Permeability to air (md) .....	600-1,900					

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.657††					
Heating value (Btu/cu. ft.) .....	760					
Water:						
Salinity, NaCl (ppm) .....	5,000-14,000					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

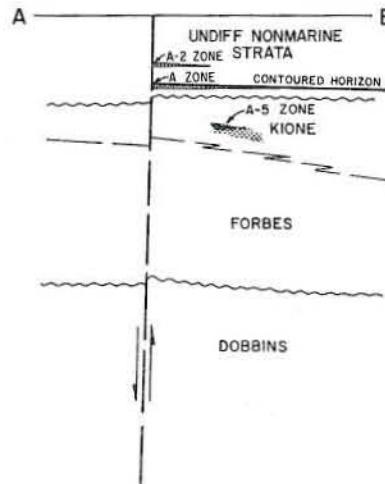
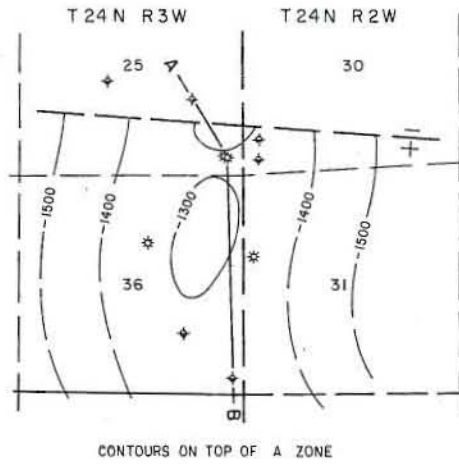
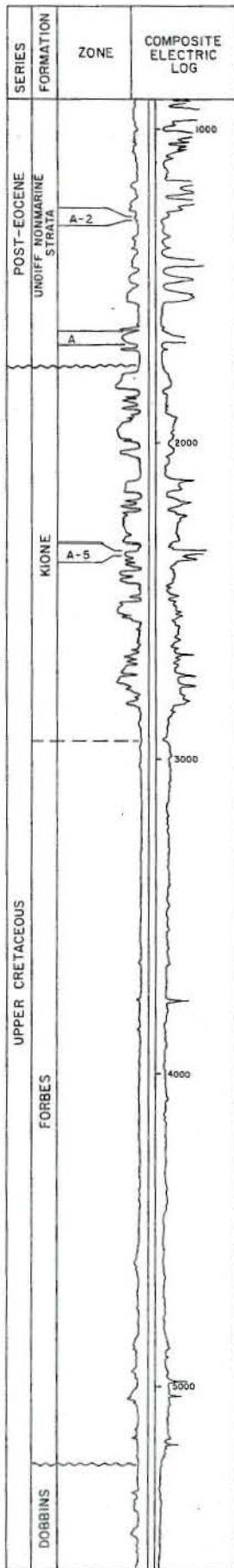
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	1,349,947					
Year .....	1955					

Base of fresh water (ft.): 1,000

Remarks: Commercial gas deliveries began in July 1954 and the field was abandoned in July 1971. The field was reactivated in 1974.

Selected References:

# SOUTH CORNING GAS FIELD (Abandoned)



COUNTY: TEHAMA

CORNING, SOUTH, GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Buttes Resources Co. "Saldubehere-Buttes" A	The Buttes Oilfields, Inc. "Saldubehere-Buttes" A	25 24N 3W	MD	2,365	A	
Deepest well	Northern Counties Petroleum Co. "Ewers Mooney" 1	Same as present	25 24N 3W	MD	8,253		Sites Late Cretaceous

ITEM	POOL DATA			FIELD OR AREA DATA
	A-2	A	A-5	
Discovery date .....	May 1957	February 1951	September 1959	
Initial production rates				
Oil (bbl/day) .....				
Gas (Mcf/day) .....	2,000	1,955	2,995	
Flow pressure (psi) .....	340	635	880	
Bean size (in.) .....	1/2	3/8	3/8	
Initial reservoir pressure (psi) .....	520	680	1,010	
Reservoir temperature (°F) .....	80	90	101	
Initial oil content (STB/ac-ft.) .....	320-390	350-420	460-560	
Initial gas content (MSCF/ac-ft.) .....	undiff. nonmarine post-Eocene	undiff. nonmarine post-Eocene	Kione Late Cretaceous	
Formation .....				
Geologic age .....				
Average depth (ft.) .....	1,185	1,560	2,340	
Average net thickness (ft.) .....	10	15	20	
Maximum productive area (acres) .....				80

RESERVOIR ROCK PROPERTIES				
Porosity (%) .....	29-33	29-33	25-28***	
Soj (%) .....	25-30	25-30	35-40***	
Swj (%) .....	70-75	70-75	60-65***	
Permeability to air (md) .....				

RESERVOIR FLUID PROPERTIES				
Oil:				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	.615††	.615††	.584††	
Heating value (Btu/cu. ft.) .....	870	870	940	
Water:				
Salinity, NaCl (ppm) .....				
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS				
Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				

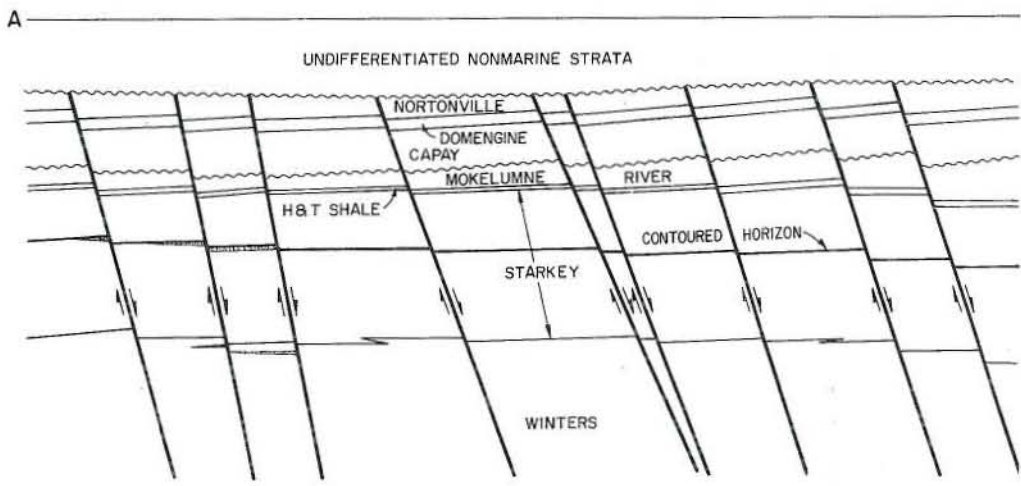
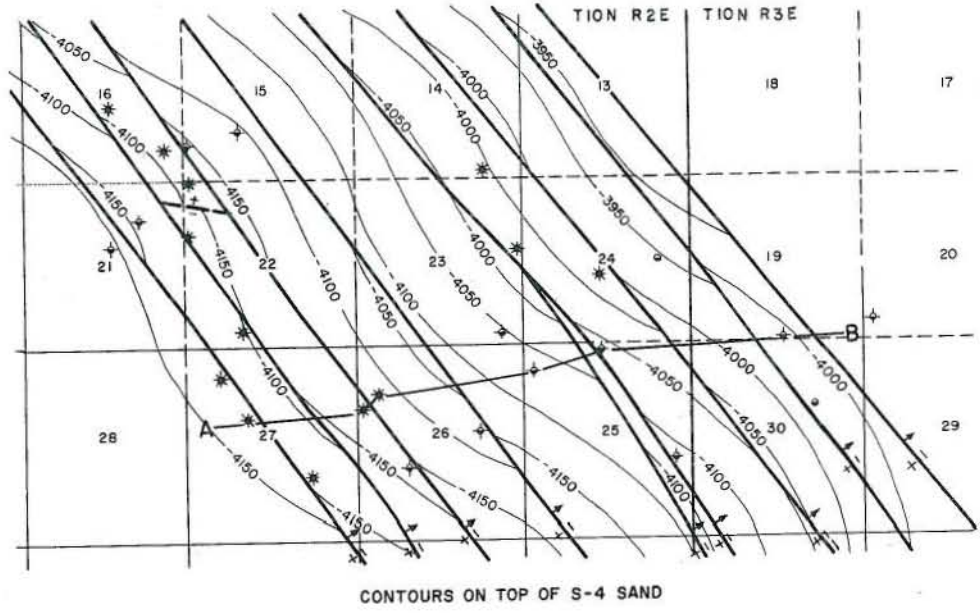
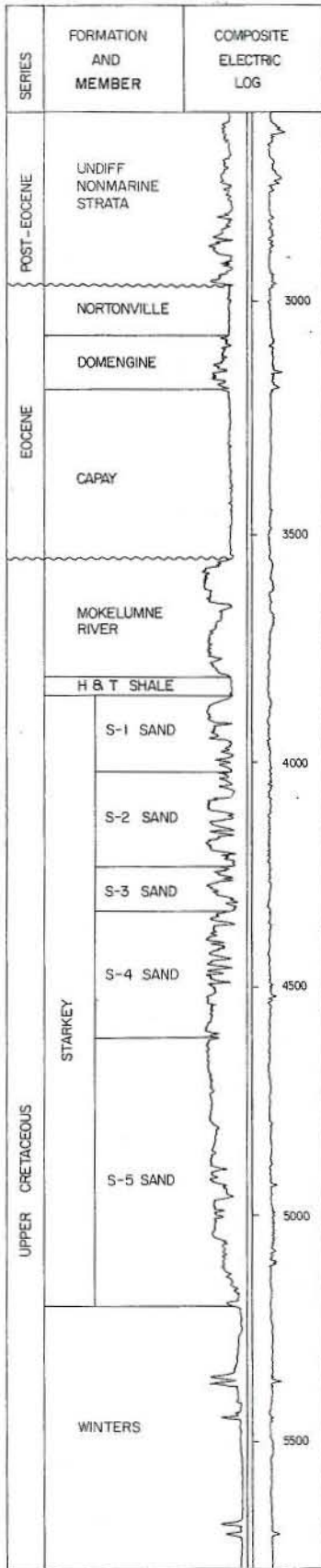
Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				218,595
Year .....				1956

Base of fresh water (ft.): 1,100

Remarks: Commercial gas deliveries began in July 1954 and ceased in August 1971. The field was abandoned in August 1972. Four wells were completed and cumulative gas production was 1,256,799 Mcf.

Selected References:

# CROSSROADS GAS FIELD



COUNTY: YOLO

CROSSROADS GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron USA Inc. "Amstar" 1	Standard Oil Company of Calif. "Amstar" 1	22 10N 2E	MD	7,850	Starkey and Winters	Forbes Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

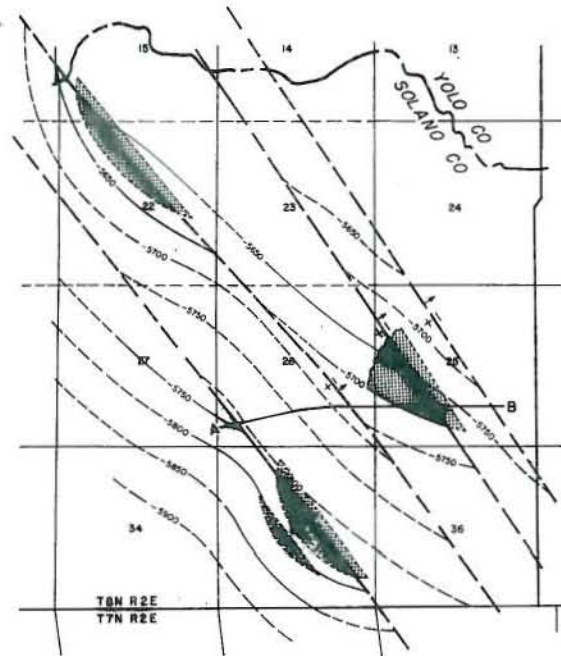
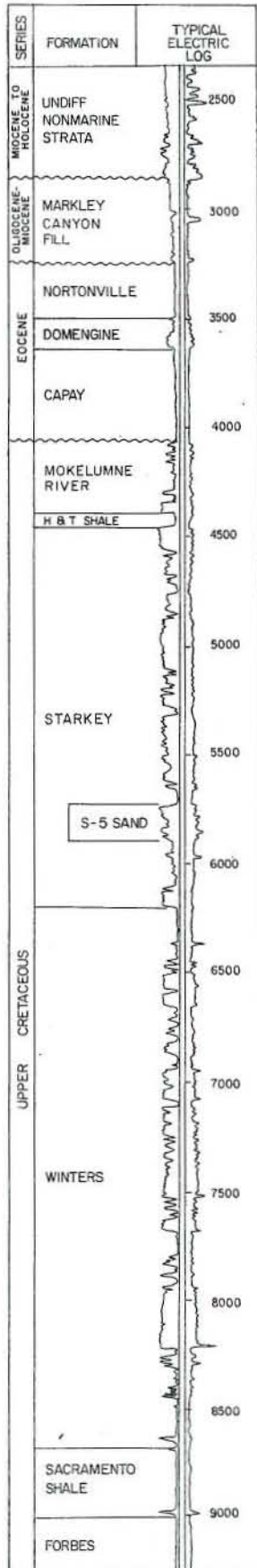
ITEM	POOL DATA				FIELD OR AREA DATA
	STARKEY (S-3)	WINTERS			
Discovery date .....	May 1976	May 1976			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	2,000	2,600			
Flow pressure (psi) .....	1,628	1,710			
Bean size (in.) .....	1/2	1/2			
Initial reservoir pressure (psi) .....	2,050	2,440			
Reservoir temperature (°F) .....	114	120			
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	970-1,300	910-1,300			
Formation .....	Starkey	Winters			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	4,150	4,985			
Average net thickness (ft.) .....	35	20			
Maximum productive area (acres) .....					1,060
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	28-34 †	22-28 †			
So <sub>g</sub> (%) .....	40-45 †	40-45 †			
Sw <sub>i</sub> (%) .....	55-60 †	55-60 †			
Sg <sub>g</sub> (%) .....					
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.587	.592			.578
Heating value (Btu/cu. ft.) .....	938	930			961
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbi)					
Year .....					
Peak gas production, net (Mcf)					
Year .....	980,448 1979	390,342 1979			

Base of fresh water (ft.): 2,500

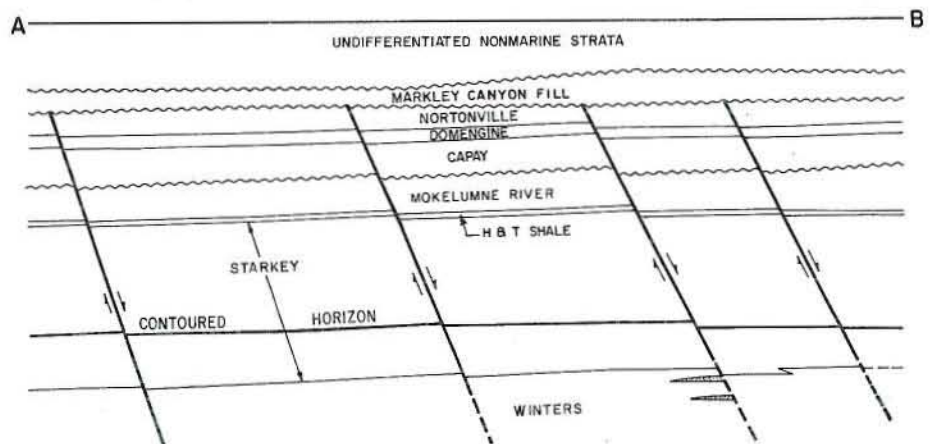
Remarks: Commercial gas deliveries began in September 1977.

Selected References:

# DAVIS SOUTHEAST GAS FIELD



CONTOURS ON TOP OF S-5 SAND





COUNTY: SOLANO and YOLO

DAVIS, SOUTHEAST, GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Phillips Petroleum Co. "Beltrami A" 1	Same as present	25 8N 2E	MD	9,207	Winters	Forbes
Deepest well	Same as above	"	"	"	"	"	Late Cretaceous

POOL DATA

ITEM	POOL DATA			FIELD OR AREA DATA
	DOMENGINE	STARKEY	WINTERS	
Discovery date .....	November 1977 <sup>a/</sup>	October 1973 <sup>b/</sup>	April 1965 <sup>c/</sup>	
Initial production rates				
Oil (bbl/day) .....	1,782	2,010	6,269	
Gas (Mcf/day) .....	500	2,125	1,780	
Flow pressure (psi) .....	3/8	1/2	3/8	
Bean size (in.) .....				
Initial reservoir pressure (psi) .....	930	2,850	2,910	
Reservoir temperature (°F) .....	114	127	134	
Initial oil content (STB/ac.-ft.) .....	400	1,600-2,000	1,200-1,700	
Initial gas content (MSCF/ac.-ft.) .....				
Formation .....	Domengine	Starkey	Winters	
Geologic age .....	Eocene	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	3,535	6,130	6,450	
Average net thickness (ft.) .....	5	9	15	
Maximum productive area (acres) .....				290

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	25**	29-32†	25-28†	
Soj (%) .....				
Swi (%) .....	40**	25-35†	30-45†	
Sgi (%) .....	60**	65-75†	55-70†	
Permeability to air (md) .....				

RESERVOIR FLUID PROPERTIES

<b>Oil:</b>				
Oil gravity (*API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
<b>Gas:</b>				
Specific gravity (air = 1.0) .....	.630 ††	.610 ††	.597 ††	
Heating value (Btu/cu. ft.) .....	854	871	925	
<b>Water:</b>				
Salinity, NaCl (ppm) .....	-	12,670	12,980	
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				

Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				432,204
Year .....				1973

Base of fresh water (ft.): 2,600-3,100

Remarks: Commercial gas deliveries began in December 1966.

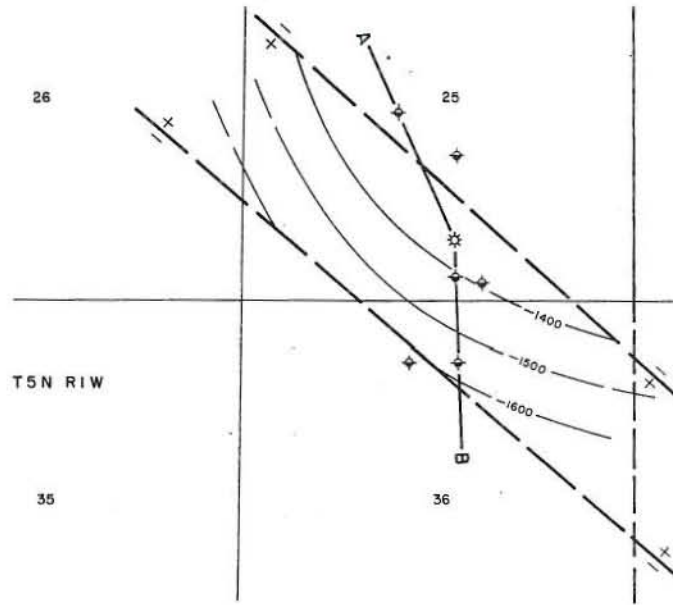
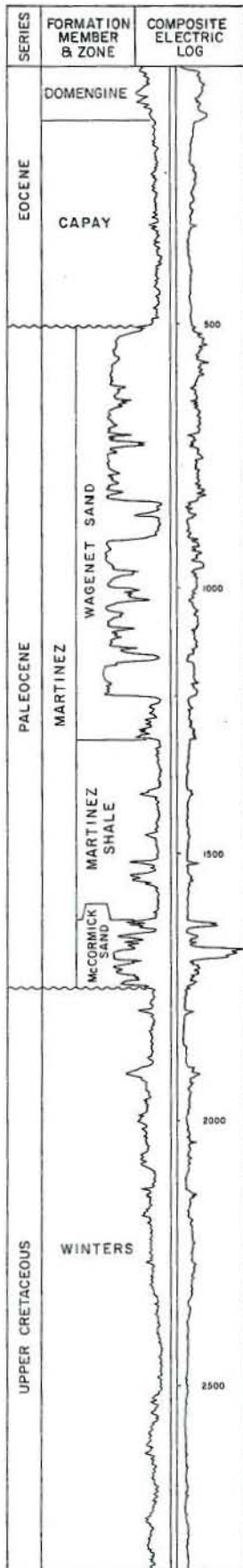
a/ Date of recompletion. Originally completed in the Winters formation. The well was abandoned in 1978.

b/ Abandoned in April 1979.

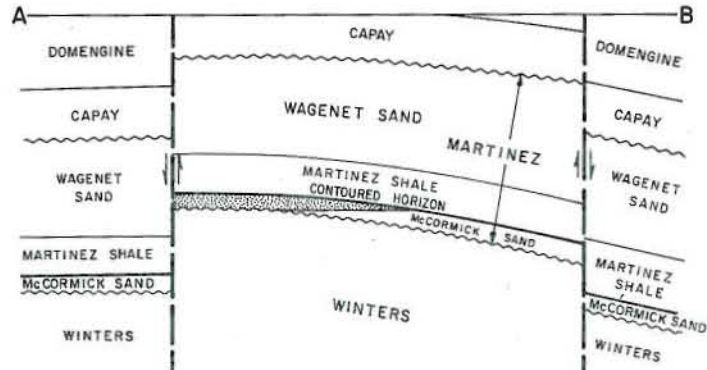
c/ Abandoned in April 1971, reactivated in July 1972, and abandoned in June 1978.

Selected References: Johnson, R. A., 1980, Davis Southeast Gas Field: Calif. Div. of Oil and Gas Publication TR24, p. 15-21.

# DENVERTON GAS FIELD (Abandoned)



CONTOURS ON TOP OF McCORMICK SAND



COUNTY: SOLANO

**DENVERTON GAS FIELD  
(ABD)**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Getty Oil Co. "A. Peterson" 1	Honolulu Oil Corp. "A. Peterson" 1	25 SN 1W	MD	1,801	McCormick	
Deepest well	Chevron USA Inc. "H. D. Peterson et al 558" 25	Standard Oil Co. of Calif. "H. D. Peterson et al 558" 25	25 SN 1W	MD	6,000		undiff. marine Late Cretaceous

**POOL DATA**

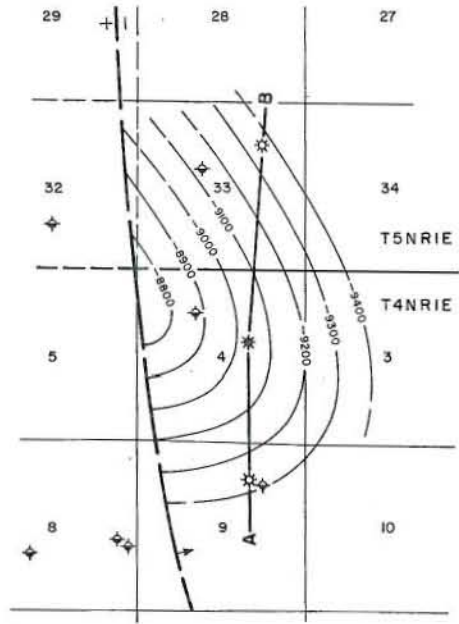
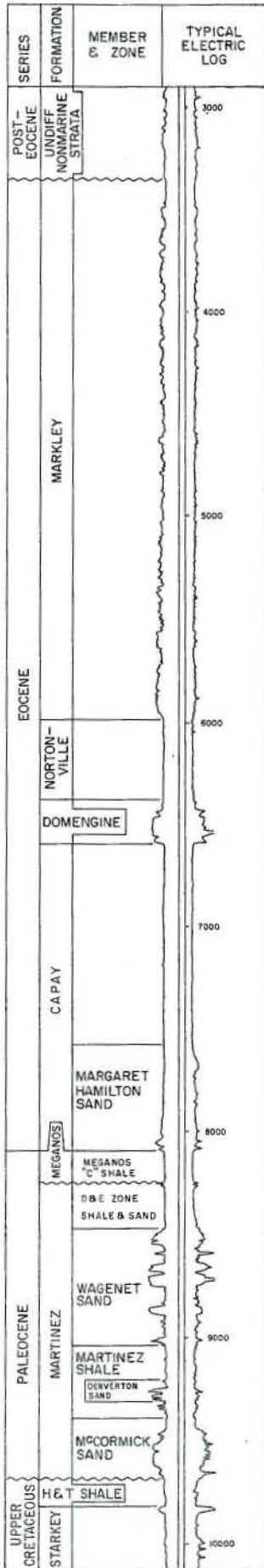
ITEM	McCORMICK					FIELD OR AREA DATA
Discovery date .....	August 1948					
Initial production rates						
Oil (bbl/day) .....	1,110					
Gas (Mcf/day) .....	750					
Flow pressure (psi) .....	14/64					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	873					
Reservoir temperature (°F) .....	95					
Initial oil content (STB/ac.-ft.) .....	330-440					
Initial gas content (MSCF/ac.-ft.) .....	Martinez					
Formation .....	Paleocene					
Geologic age .....						
Average depth (ft.) .....	1,425					
Average net thickness (ft.) .....	25					
Maximum productive area (acres) .....	40					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	22-25***					
So <sub>g</sub> (%) .....	35-40***					
Sw <sub>i</sub> (%) .....	55-65***					
Sg <sub>g</sub> (%) .....						
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.611					
Heating value (Btu/cu. ft.) .....	1,033					
Water:						
Salinity, NaCl (ppm) .....	3,080					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbi)						
Year .....						
Peak gas production, net (Mcf)	99,910					
Year .....	1950					

Base of fresh water (ft.): 100-900

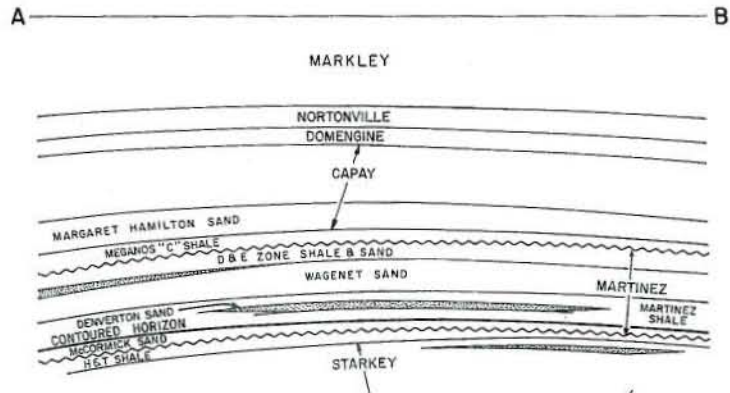
Remarks: Commercial gas deliveries began in October 1948 and ceased in December 1952. The field was abandoned in March 1953. Only one well was completed and cumulative gas production was 231,525 Mcf.

Selected References:

# DENVERTON CREEK GAS FIELD



CONTOURS ON TOP OF MCCORMICK SAND



COUNTY: SOLANO

DENVERTON CREEK GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Mobil Oil Corp. "Trojan Powder Co." 1	Same as present	33 5W 1E	MD	11,209	unnamed	Winters Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	POOL DATA			FIELD OR AREA DATA
	ANDERSON-WAGENET	DENVERTON (Heldorn)	UNNAMED	
Discovery date .....	September 1967	November 1968	October 1966	
Initial production rates				
Oil (bbl/day) .....	158	4,947	1,285	
Gas (Mcf/day) .....	2,650	1,600	2,110	
Flow pressure (psi) .....	1/2	20/64	14/64	
Bean size (in.) .....				
Initial reservoir pressure (psi) .....	3,730	4,680	4,800	
Reservoir temperature (°F) .....	178	182	194	
Initial oil content (STB/ac-ft.) .....				
Initial gas content (MSCF/ac-ft.) .....	1,200-1,500	1,400	1,600	
Formation .....	Martinez	Martinez	Starkey	
Geologic age .....	Paleocene	Paleocene	Late Cretaceous	
Average depth (ft.) .....	8,585	8,930	9,890	
Average net thickness (ft.) .....	15	35	30	
Maximum productive area (acres) .....				220

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	20-24***	21	22	
So <sub>2</sub> (%) .....	35-40***	40	37	
Sw <sub>1</sub> (%) .....	60-65***	60	63	
Sg <sub>1</sub> (%) .....		5		
Permeability to air (md) .....				

RESERVOIR FLUID PROPERTIES

<b>Oil:</b>				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
<b>Gas:</b>				
Specific gravity (air = 1.0) .....	.660	.659	.660	
Heating value (Btu/cu. ft.) .....	1,045	1,045	1,070	
<b>Water:</b>				
Salinity, NaCl (ppm) .....	1,540	4,110-34,000	9,930	
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

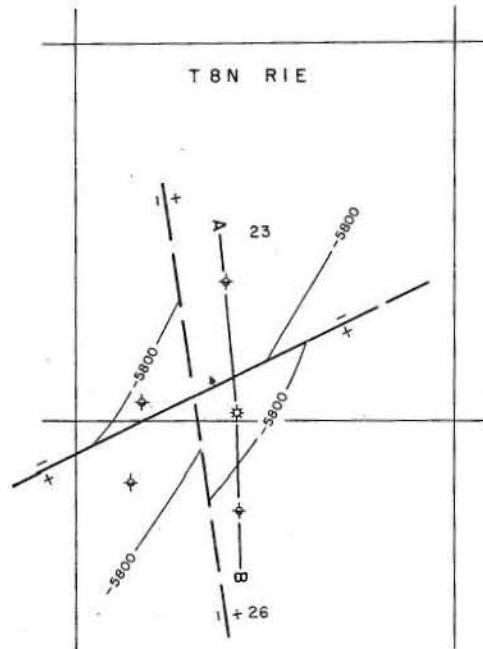
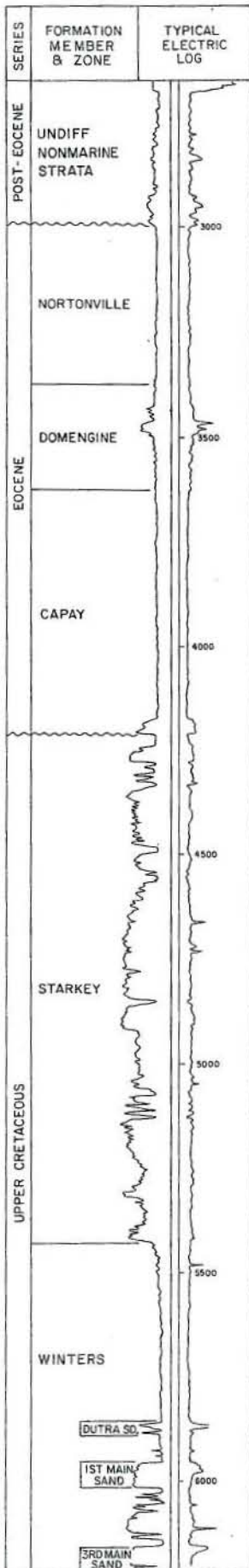
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl) .....					
Year .....					
Peak gas production, net (Mcf) .....					225,706
Year .....					1977

Base of fresh water (ft.): Less than 500

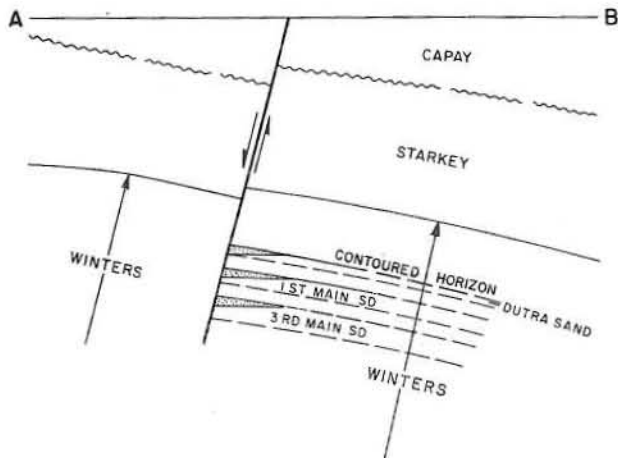
Remarks: Commercial gas deliveries began in March 1967 and ceased in May 1971. The field was abandoned in January 1973. The field was reactivated in October 1977.

Selected References:

# DIXON GAS FIELD (Abandoned)



CONTOURS ON TOP OF DUTRA SAND



COUNTY: SOLANO

**DIXON GAS FIELD  
(ABD)**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Q. R. Grenfell & Son "Dutra et al" 1	S. M. Reynolds Oper. "Dutra et al" 1	23 8N 1E	MD	6,205	Winters	
Deepest well	Cameron Oil Co. "Burroughs" 1	Same as present	23 8N 1E	MD	7,912		Winters Late Cretaceous

**POOL DATA**

ITEM	POOL DATA			FIELD OR AREA DATA
	DUTRA	1ST MAIN	3RD MAIN	
Discovery date .....	June 1963	June 1963	January 1963	
Initial production rates				
Oil (bbl/day) .....	See remarks	See remarks	See remarks	
Gas (Mcf/day) .....				
Flow pressure (psi) .....				
Bean size (in.) .....				
Initial reservoir pressure (psi) .....	2,685	2,670	2,760	
Reservoir temperature (°F) .....	118	120	122	
Initial oil content (STB/ac.-ft.) .....				
Initial gas content (MSCF/ac.-ft.) .....	1,100-1,400	1,100-1,400	1,200-1,400	
Formation .....	Winters	Winters	Winters	
Geologic age .....	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	5,860	5,950	6,150	
Average net thickness (ft.) .....	10	15	10	
Maximum productive area (acres) .....				80

**RESERVOIR ROCK PROPERTIES**

ITEM	DUTRA	1ST MAIN	3RD MAIN
Porosity (%) .....	24-27	24-27	24-27
So <sub>i</sub> (%) .....	35-40*	35-40*	35-40***
Sw <sub>i</sub> (%) .....	60-65*	60-65*	60-65***
Sg <sub>i</sub> (%) .....			
Permeability to air (md) .....			

**RESERVOIR FLUID PROPERTIES**

ITEM	DUTRA	1ST MAIN	3RD MAIN
<b>Oil:</b>			
Oil gravity (°API) .....			
Sulfur content (% by wt.) .....			
Initial solution GOR (SCF/STB) .....			
Initial oil FVF (RB/STB) .....			
Bubble point press. (psia) .....			
Viscosity (cp) @ °F. ....			
<b>Gas:</b>			
Specific gravity (air = 1.0) .....	.615††	.620††	.620††
Heating value (Btu/cu. ft.) .....	870	865	865
<b>Water:</b>			
Salinity, NaCl (ppm) .....	17,000	10,443	10,443
T.D.S. (ppm) .....			
R <sub>w</sub> (ohm/m) (77°F) .....			

**ENHANCED RECOVERY PROJECTS**

ITEM	DUTRA	1ST MAIN	3RD MAIN
Enhanced recovery projects .....			
Date started .....			
Date discontinued .....			

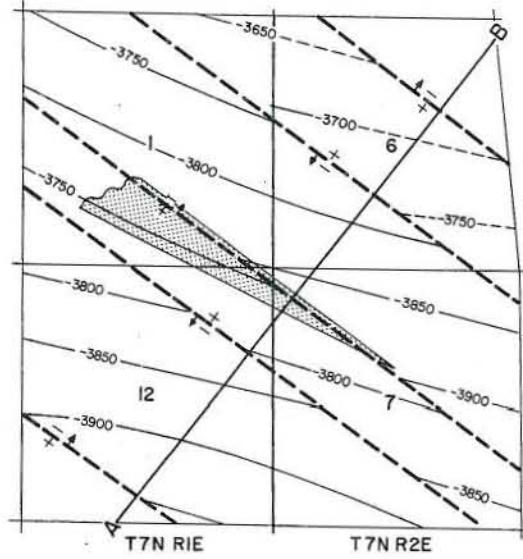
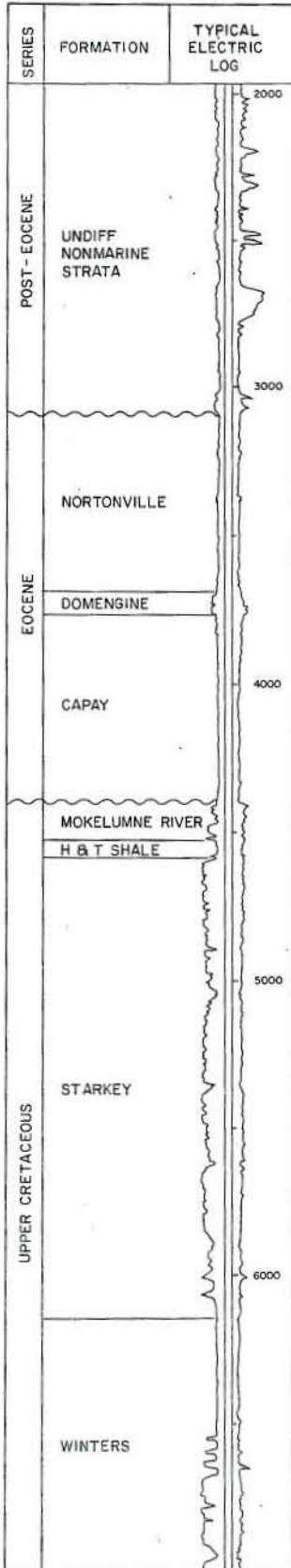
ITEM	DUTRA	1ST MAIN	3RD MAIN	FIELD OR AREA DATA
Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				226,023
Year .....				1964

Base of fresh water (ft.): 2,700

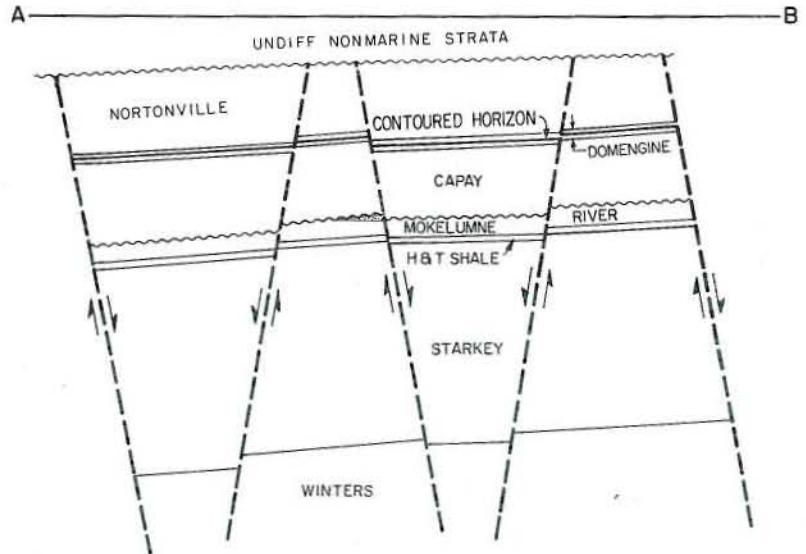
Remarks: Commercial gas deliveries began in June 1964. The single producing well was abandoned in January 1971 with a cumulative production of 636,502 Mcf. Production from the three zones was commingled. During a back-pressure test in June 1963, gas was produced as follows: Dutra zone: 5,000 Mcf per day, 2,140 psi flow pressure, 5/16" bean; 1st and 3rd Main zones (commingled): 4,880 Mcf per day, 2,100 psi flow pressure, 5/16" bean.

Selected References:

# EAST DIXON GAS FIELD



CONTOURS ON ELECTRIC LOG MARKER IN DOMENGINE





COUNTY: SOLANO

DIXON, EAST, GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Coastal Oil & Gas Corp. "E. Dixon" 1	Gas Producing Enterprises "E. Dixon" 1	7 7N 2E	MD	7,088	Mokelumne River	Winters Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

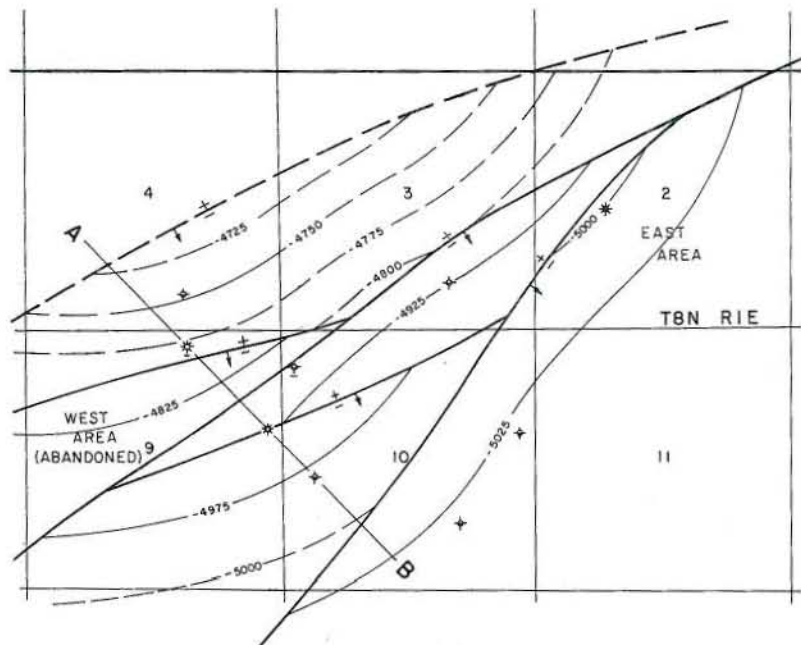
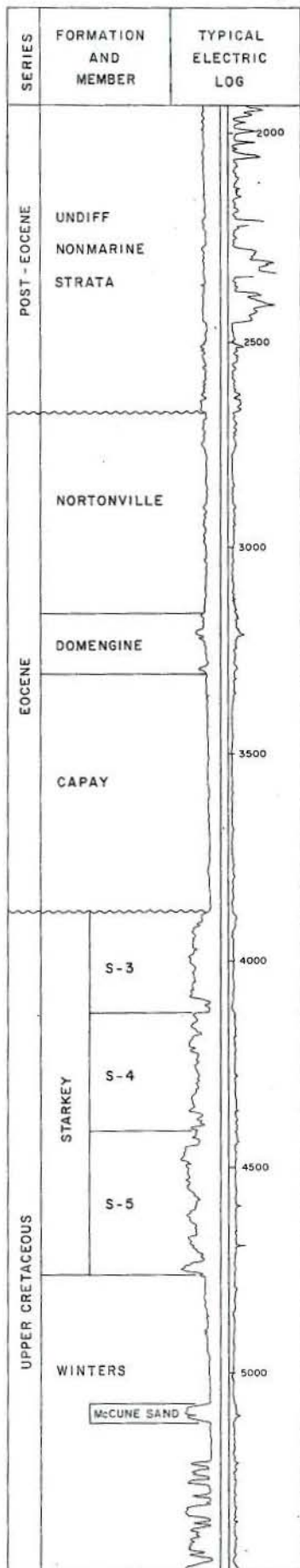
ITEM	MOKELUMNE RIVER					FIELD OR AREA DATA
Discovery date .....	May 1979					
Initial production rates						
Oil (bbl/day) .....	1,350					
Gas (Mcf/day) .....	1,530					
Flow pressure (psi) .....	3/16					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,970					
Reservoir temperature (°F) .....	115					
Initial oil content (STB/ac.-ft.) .....	370					
Initial gas content (MSCF/ac.-ft.) .....	Mokelumne River					
Formation .....	Late Cretaceous					
Geologic age .....						
Average depth (ft.) .....	4,500					
Average net thickness (ft.) .....	15					
Maximum productive area (acres) .....	60					
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	15†					
So <sub>g</sub> (%) .....	58†					
Sw <sub>i</sub> (%) .....	42†					
Sg <sub>g</sub> (%) .....						
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.580					
Heating value (Btu/cu. ft.) .....	965					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 2,700-2,800

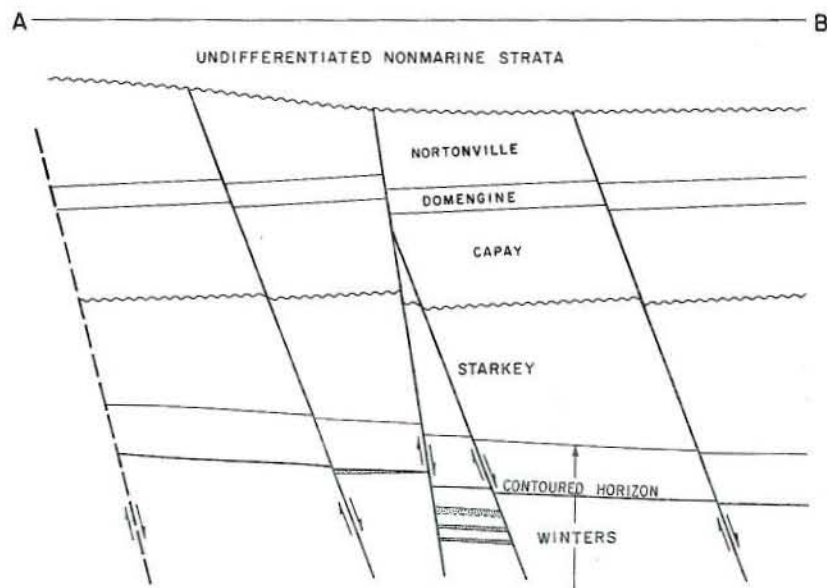
Remarks: Commercial gas deliveries have not yet begun.

Selected References:

# DRY SLOUGH GAS FIELD



CONTOURS ON TOP OF McCUNE SAND



COUNTY: YOLO

DRY SLOUGH GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Mariposa Petroleum Co. "Russell" 2	Same as present	9 8N 1E	MD	5,543 <sup>a/</sup>	McCune	
Deepest well	Cities Service Co. "Reardon A" 1	Same as present	3 8N 1E	MD	8,301		Forbes Late Cretaceous

POOL DATA

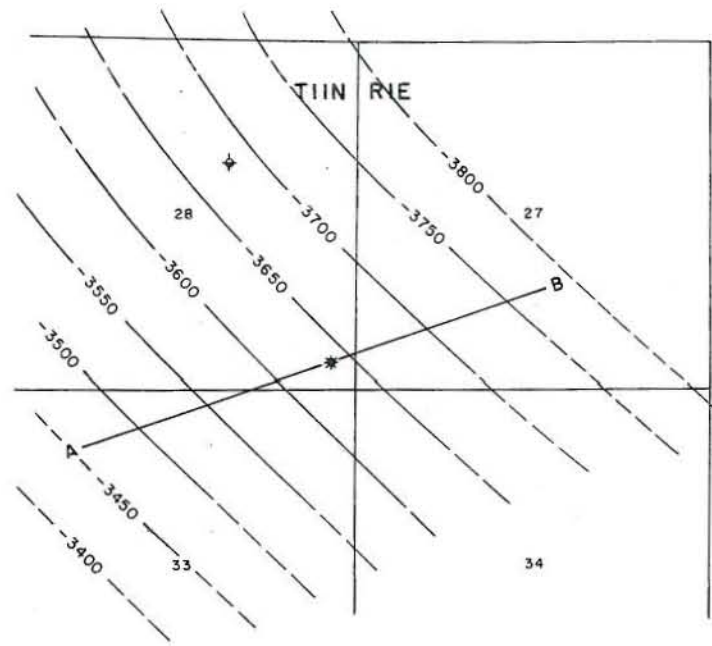
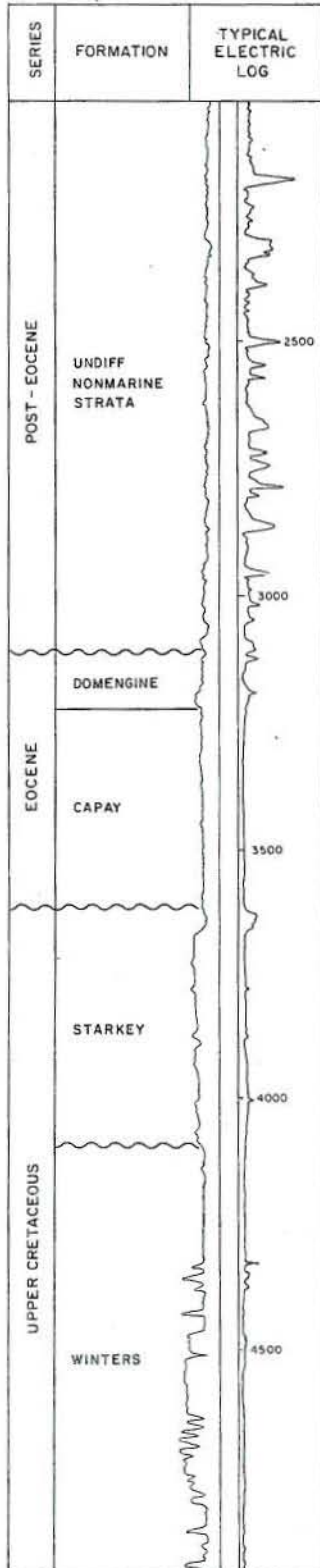
ITEM	POOL DATA		FIELD OR AREA DATA
	(West Area) McCUNE	(East Area) WINTERS	
Discovery date .....	February 1978	August 1978	
Initial production rates			
Oil (bbl/day) .....			
Gas (Mcf/day) .....	2,575	2,340	
Flow pressure (psi) .....	1,775	1,000	
Bean size (in.) .....	1/4	10/64	
Initial reservoir pressure (psi) .....	2,140	2,619	
Reservoir temperature (°F) .....	118-124	140	
Initial oil content (STB/ac.-ft.) .....			
Initial gas content (MSCF/ac.-ft.) .....	980-1,200	940-1,200	
Formation .....	Winters	Winters	
Geologic age .....	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	5,030-5,350	6,040	
Average net thickness (ft.) .....	10-20	15	
Maximum productive area (acres) .....			180
<b>RESERVOIR ROCK PROPERTIES</b>			
Porosity (%) .....	26-30†	24-27†	
So <sub>g</sub> (%) .....			
Swi (%) .....	35-40*	45-50†	
Sgi (%) .....	60-65*	50-55†	
Permeability to air (md) .....			
<b>RESERVOIR FLUID PROPERTIES</b>			
Oil:			
Oil gravity (°API) .....			
Sulfur content (% by wt.) .....			
Initial solution GOR (SCF/STB) .....			
Initial oil FVF (RB/STB) .....			
Bubble point press. (psia) .....			
Viscosity (cp) @ °F .....			
Gas:			
Specific gravity (air = 1.0) .....	.624	.586	
Heating value (Btu/cu. ft.) .....	859	976	
Water:			
Salinity, NaCl (ppm) .....			
T.D.S. (ppm) .....			
R <sub>w</sub> (ohm/m) (77°F) .....			
<b>ENHANCED RECOVERY PROJECTS</b>			
Enhanced recovery projects .....			
Date started .....			
Date discontinued .....			
Peak oil production (bbl) Year .....			
Peak gas production, net (Mcf) Year .....			258,455 1979

Base of fresh water (ft.): 2,400-2,700

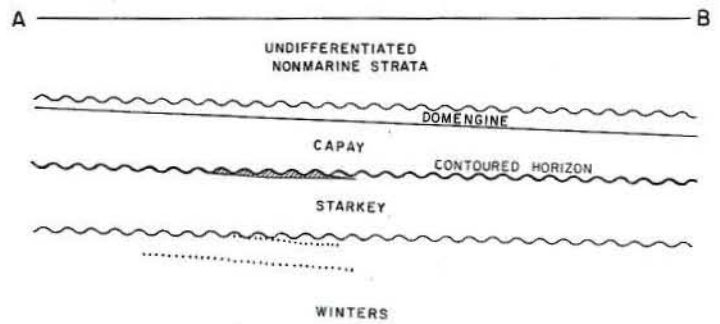
Remarks: Commercial gas deliveries began in January 1979. The West Area was abandoned in July 1980. Cumulative production for the West Area is 248,455 Mcf. One well has been completed in the East Area and commercial gas deliveries there have not yet begun.  
<sup>a/</sup> Directional well, true vertical depth is 5,398 feet.

Selected References:

# DUFOUR GAS FIELD



CONTOURS ON BASE OF CAPAY



COUNTY: YOLO

**DUFOUR GAS FIELD**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	ARCO Oil and Gas Co. "Dufour" 1	Atlantic Richfield Co. "Dufour" 1	28 11N 1E	MD	5,118	Starkey	Sacramento shale
Deepest well	Same as above	"	"	"	"	"	Late Cretaceous

**POOL DATA**

ITEM	STARKEY					FIELD OR AREA DATA
Discovery date .....	December 1973					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	3,615					
Flow pressure (psi) .....	1,475					
Bean size (in.) .....	1/2					
Initial reservoir pressure (psi) .....	1,880					
Reservoir temperature (°F) .....	101					
Initial oil content (STB/ac-ft.) .....						
Initial gas content (MSCF/ac-ft.) .....	960-1,200					
Formation .....	Starkey					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	3,700					
Average net thickness (ft.) .....	30					
Maximum productive area (acres) .....	80					

**RESERVOIR ROCK PROPERTIES**

Porosity (%) .....	28-32***					
So <sub>2</sub> (%) .....	40-45***					
Sw <sub>2</sub> (%) .....	55-60***					
Sg <sub>2</sub> (%) .....						
Permeability to air (md) .....						

**RESERVOIR FLUID PROPERTIES**

<b>Oil:</b>						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
<b>Gas:</b>						
Specific gravity (air = 1.0) .....	.577					
Heating value (Btu/cu. ft.) .....	968					
<b>Water:</b>						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	605,613					
Year .....	1979					

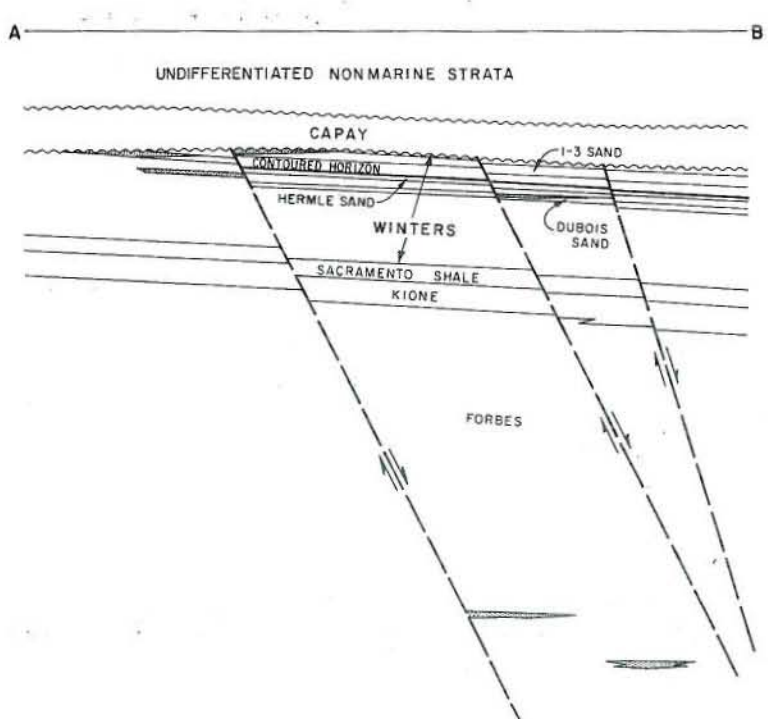
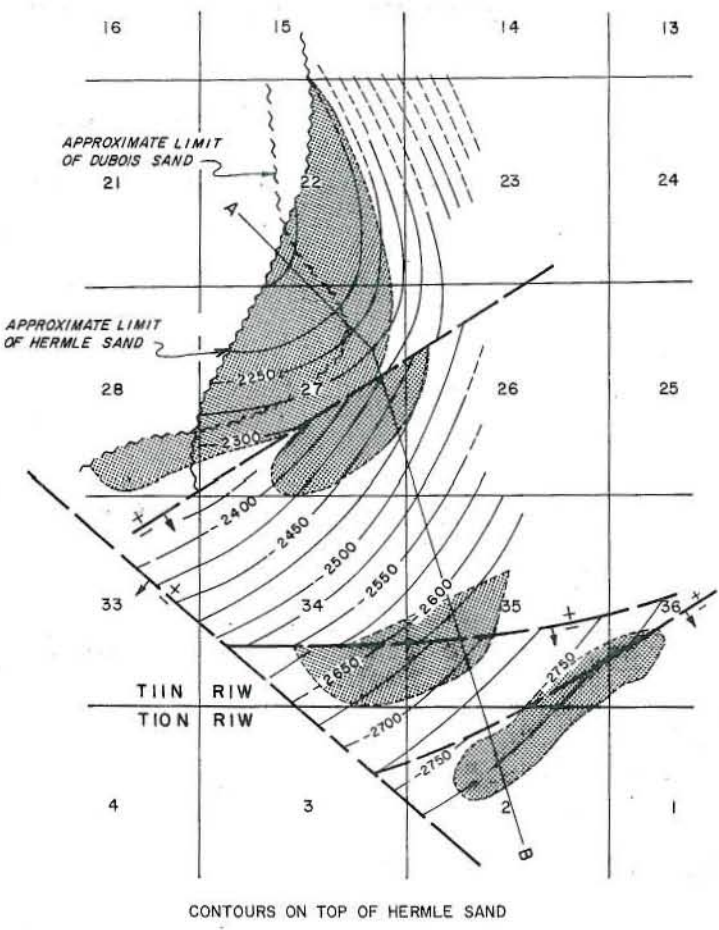
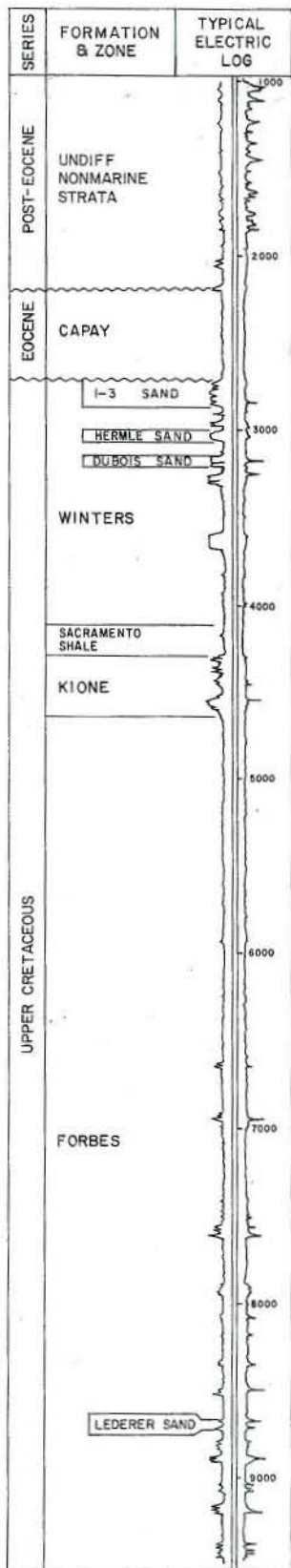
Base of fresh water (ft.): 2,100

Remarks: Commercial gas deliveries began in December 1978.

Selected References:

# DUNNIGAN HILLS GAS FIELD

(Abandoned)



COUNTY: YOLO

**DUNNIGAN HILLS GAS FIELD  
(ABD)**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Texaco Inc. "Dunnigan Unit One" 1	The Texas Co. "Hermie" 1	22 11N 1W	MD	4,022	Hermie & Dubois	
Deepest well	Hunnicuttt & Camp Drilling Co. "A. M. Richie" 1	Standard Oil Company of Calif. "A. M. Richie" 1	36 11N 1W	MD	9,500		Forbes Late Cretaceous

**POOL DATA**

ITEM	1-3	HERMIE	DUBOIS	LEDERER	FIELD OR AREA DATA
Discovery date	August 1947	February 1946	February 1946	May 1960	
Initial production rates					
Oil (bbl/day)					
Gas (Mcf/day)	5,000 <sup>a/</sup>	3,030 <sup>b/</sup>	3,030 <sup>b/</sup>	2,250 <sup>c/</sup>	
Flow pressure (psi)		926	926	950	
Bean size (in.)	28/64	3/8	3/8	5/16	
Initial reservoir pressure (psi)	1,040	1,060	1,080	5,005	
Reservoir temperature (°F)	103	104	109	155	
Initial oil content (STB/ac.-ft.)					
Initial gas content (MSCF/ac.-ft.)	720-920	730-940	730-940	900-1,400	
Formation	Winters	Winters	Winters	Forbes	
Geologic age	Late Cretaceous	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Average depth (ft.)	2,450	2,465	2,650	8,400	
Average net thickness (ft.)	40	65	30	15	
Maximum productive area (acres)					1,300

**RESERVOIR ROCK PROPERTIES**

Porosity (%)	34-38	34-38	34-38	16-25†	
So <sub>g</sub> (%)					
Sw <sub>i</sub> (%)	25-35	25-35	25-35	55†	
Sg <sub>i</sub> (%)	65-75	65-75	65-75	45†	
Permeability to air (md)	300-1,700				

**RESERVOIR FLUID PROPERTIES**

<b>Oil:</b>					
Oil gravity (°API)					
Sulfur content (% by wt.)					
Initial solution GOR (SCF/STB)					
Initial oil FVF (RB/STB)					
Bubble point press. (psia)					
Viscosity (cp) @ °F					
<b>Gas:</b>					
Specific gravity (air = 1.0)	.577††	.577††	.577††	.555††	
Heating value (Btu/cu. ft.)	970	970	970	1,035	
<b>Water:</b>					
Salinity, NaCl (ppm)	5,500	5,800	8,200		
T.D.S. (ppm)					
R <sub>w</sub> (ohm/m) (77°F)					

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects					
Date started					
Date discontinued					

Peak oil production (bbl)					
Year					
Peak gas production, net (Mcf)					1,441,810
Year					1952

Base of fresh water (ft.): 1,750

**Remarks:** Commercial gas deliveries began in January 1950. The field was abandoned in December 1977. Seventeen wells were completed and cumulative production was 10,375,228 Mcf of gas and 808 barrels of condensate.

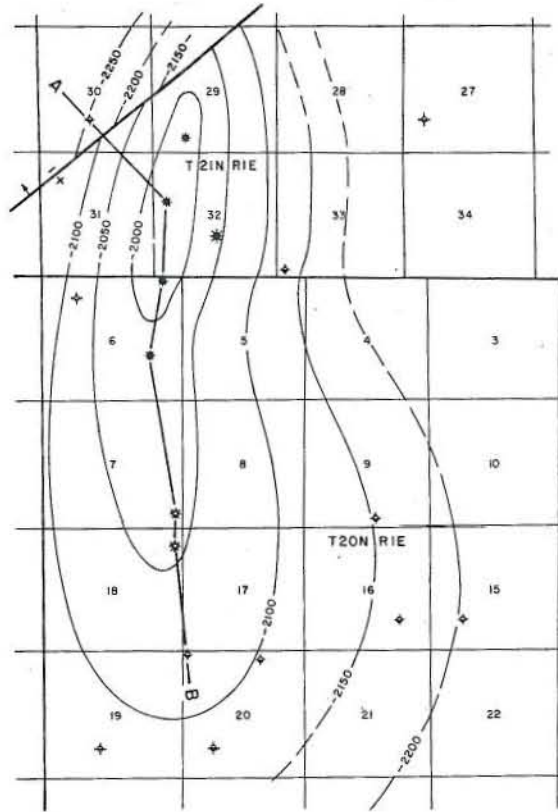
<sup>a/</sup> Formation test in August 1947. First commercial production from this zone: The Texas Co. (now Texaco Inc.) "Dunnigan Unit One" 6, Sec. 27, T. 11N., R. 1W., completed in September 1950; initial daily production: 1,500 Mcf, flow pressure 960 psi, 1/4-inch bean.

<sup>b/</sup> Production from Hermie and Dubois zones commingled.

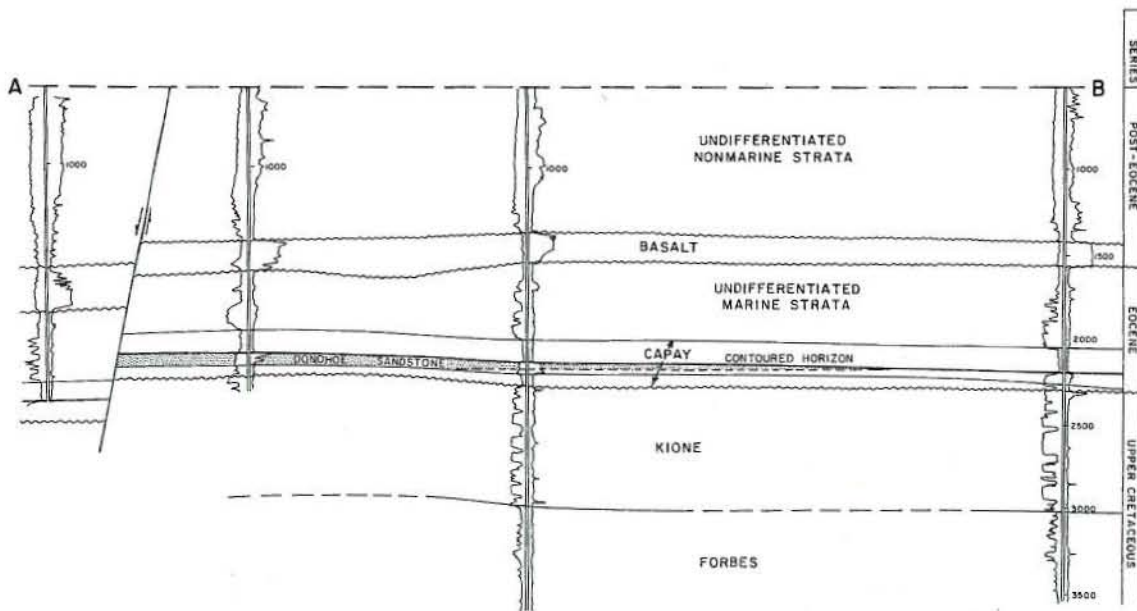
<sup>c/</sup> Twenty barrels of condensate was also produced.

**Selected References:** Corwin, C. H., 1951, Dunnigan Hills Gas Field; Calif. Div. of Oil and Gas, Summary of Operations - Calif. Oil Fields, Vol. 37, No. 2.

# DURHAM GAS FIELD



CONTOURS ON TOP OF DONOHOE SANDSTONE





COUNTY: BUTTE

DURHAM GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron U.S.A. Inc. "Donohue Fee" 1	Standard Oil Co. of Calif. "Donohue Fee" 1	6 20N 1E	MD	6,000	Donohue	Guinda Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

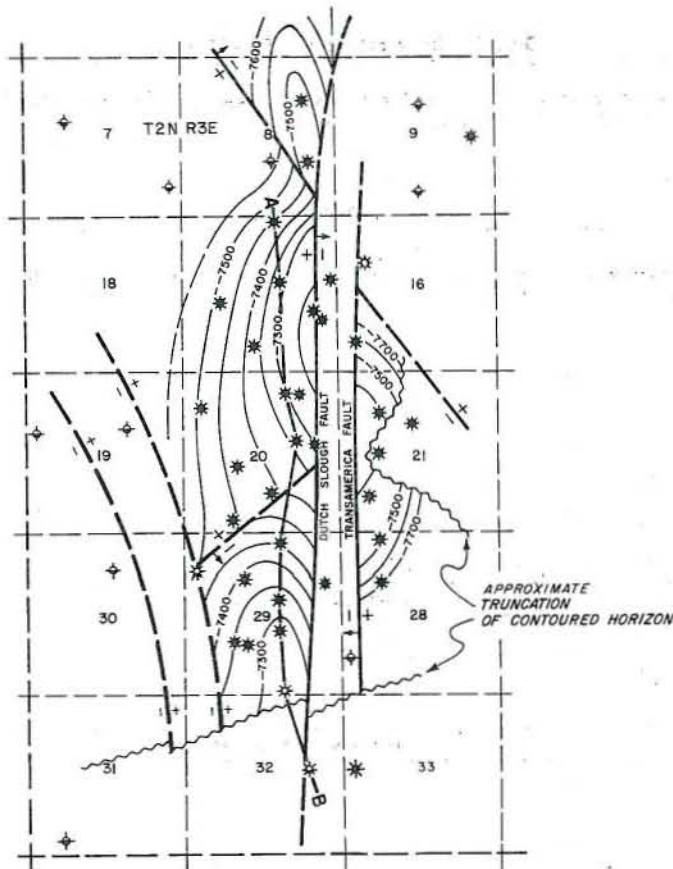
ITEM	DONOHUE					FIELD OR AREA DATA
Discovery date .....	July 1946					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	10,937					
Flow pressure (psi) .....	824					
Bean size (in.) .....	7/8					
Initial reservoir pressure (psi) .....	970					
Reservoir temperature (°F) .....	94					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	510					
Formation .....	Capay					
Geologic age .....	Eocene					
Average depth (ft.) .....	2,130					
Average net thickness (ft.) .....	35					
Maximum productive area (acres) .....	1,790					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	25*					
So <sub>i</sub> (%) .....	30*					
Sw <sub>i</sub> (%) .....	70*					
Sg <sub>i</sub> (%) .....						
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.678					
Heating value (Btu/cu. ft.) .....	711					
Water:						
Salinity, NaCl (ppm) .....	22,600					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....	1,703,625 1972					

Base of fresh water (ft.): 1,150

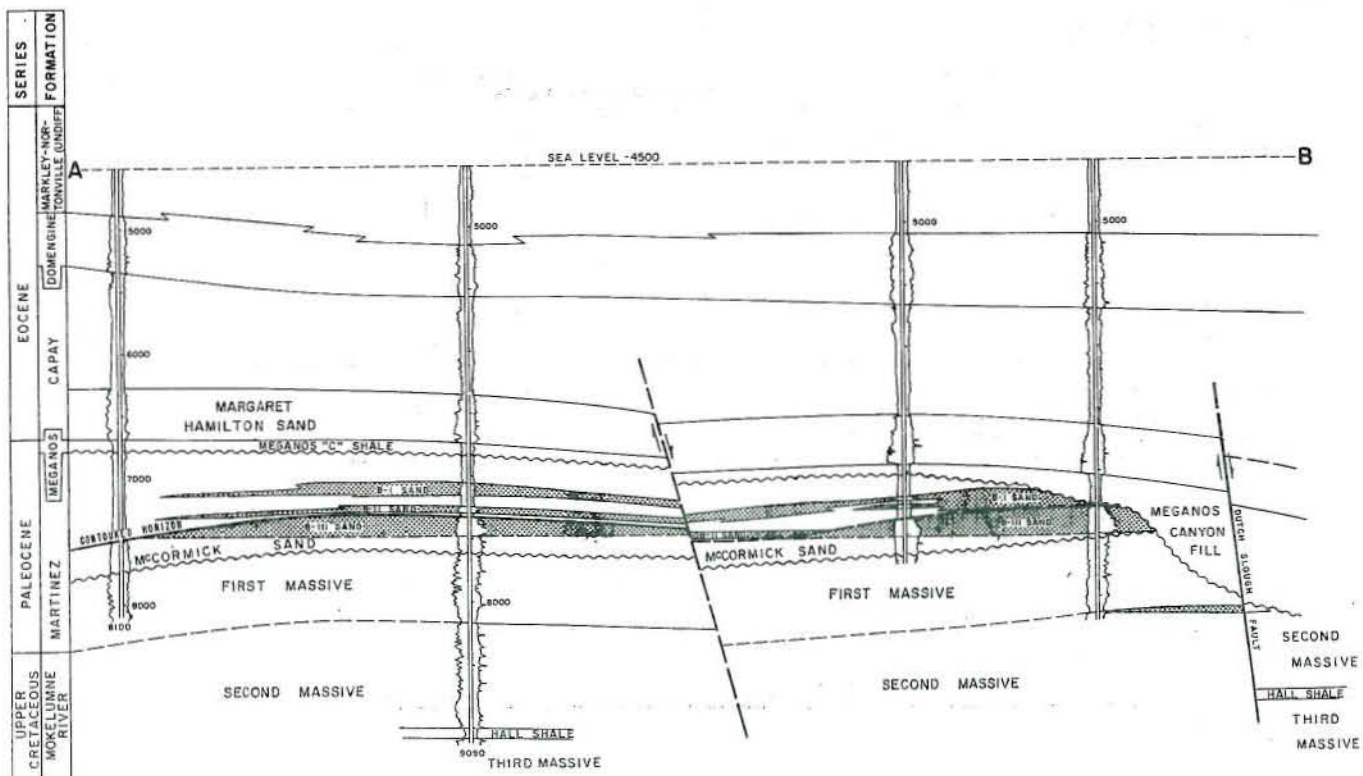
Remarks: Commercial gas deliveries began in October 1949. Btu value of gas is low due to high nitrogen content.

Selected References: Weddle, J. R., 1962, Durham Gas Field; Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 48, No. 2.

# DUTCH SLOUGH GAS FIELD



CONTOURS ON TOP OF MCCORMICK SAND



COUNTY: CONTRA COSTA

DUTCH SLOUGH GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Aminoil USA, Inc., Unit Oper. "Tract 3" 3-1	Signal Oil and Gas Co. "Signal-Burroughs" 1	20 2N 3E	MD	7,600	Anderson	
Deepest well	Signal Oil and Gas Co., Oper. "Tract 1" 1-7	Union Oil Company of Calif. "U.S.G.-Delta Properties" 7	17 2N 3E	MD	13,000		Winters Late Cretaceous

POOL DATA

ITEM	ANDERSON	B-I	B-II	B-III	SECOND MASSIVE	FIELD OR AREA DATA
Discovery date .....	March 1964	March 1964	March 1964	October 1963	October 1963	
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	3,470	2,415	4,730	9,700	1,280	
Flow pressure (psi) .....	1,205	2,260	2,191	2,200	1,435	
Bean size (in.) .....	21/64	14/64	18/64	26/64	12/64	
Initial reservoir pressure (psi) .....	3,161	3,257	3,281	3,317	3,505	
Reservoir temperature (°F) .....	163	166	167	169	181	
Initial oil content (STB/ac-ft.) .....	1,600	1,600	1,600	1,300-1,400		
Initial gas content (MSCF/ac-ft.) .....						
Formation .....	Martinez	Martinez	Martinez	Martinez	Mokelumne River	
Geologic age .....	Paleocene	Paleocene	Paleocene	Paleocene	Lake Cretaceous	
Average depth (ft.) .....	7,000	7,200	7,300	7,400	8,100	
Average net thickness (ft.) .....	50	50	50	95	15	
Maximum productive area (acres) .....						2,360

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	28	27	27	26		
So <sub>2</sub> (%) .....						
Sw <sub>1</sub> (%) .....	33	33	33	40-45		
Sg <sub>1</sub> (%) .....	67	67	67	55-60		
Permeability to air (md) .....	-	195	195	34		

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.591	.591	.597	.603	.591	
Heating value (Btu/cu. ft.) .....	1,060	1,060	1,065	1,070	1,060	
Water:						
Salinity, NaCl (ppm) .....	-	325	428	4,622	1,301	
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

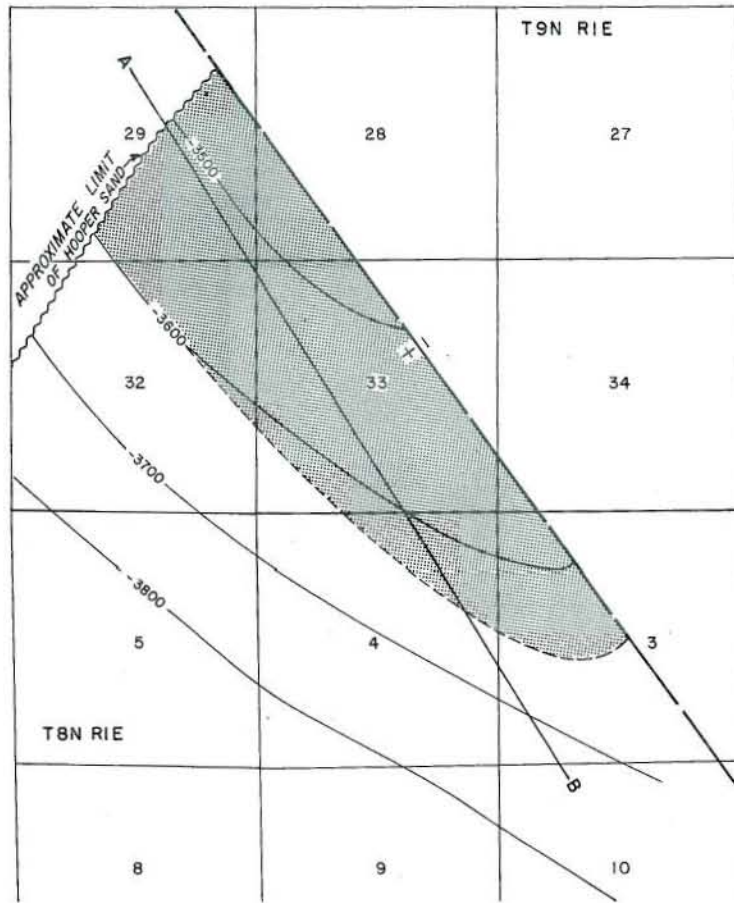
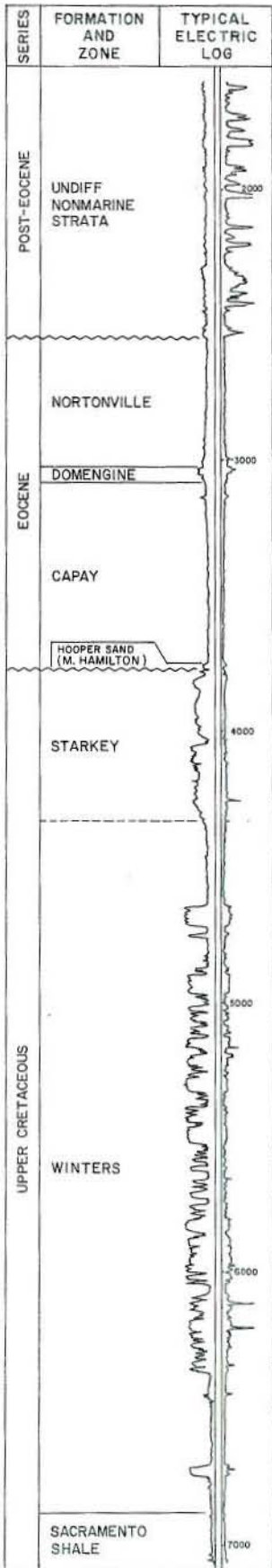
Peak oil production (bbl) Year .....						
Peak gas production, net (Mcf) Year .....						23,170,081 1966

Base of fresh water (ft.): 800

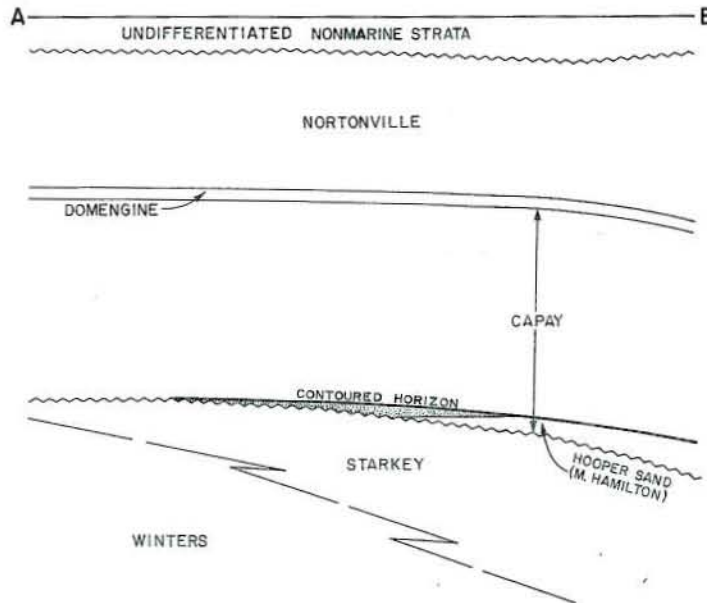
Remarks:

Selected References: Hunter, W. J., 1964, Dutch Slough Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 50, No. 2.

# FAIRFIELD KNOLLS GAS FIELD



CONTOURS ON TOP OF HOOPER (MARGARET HAMILTON) SAND



COUNTY: YOLO

FAIRFIELD KNOLLS GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron U.S.A. Inc. "E.E. Hooper" 1	Standard Oil Company of California "E.E. Hooper" 1	32 9N 1E	MD	5,181	Hooper	
Deepest well	Supreme Oil & Gas Corp. "Corcoran" 1	Franco Western Oil Co. "Corcoran" 33-4	33 9N 1E	MD	7,069		Sacramento shale Late Cretaceous

POOL DATA

ITEM	POOL DATA		FIELD OR AREA DATA
	HOOPER	UNNAMED	
Discovery date .....	November 1937	April 1964	
Initial production rates			
Oil (bbl/day) .....			
Gas (Mcf/day) .....	13,000	2,930	
Flow pressure (psi) .....	720	1,900	
Bean size (in.) .....	1/2	1/4	
Initial reservoir pressure (psi) .....	1,610	2,280	
Reservoir temperature (°F) .....	108	124	
Initial oil content (STB/ac.-ft.) .....			
Initial gas content (MSCF/ac.-ft.) .....	1,000	1,100-1,300	
Formation .....	Capay	Winters	
Geologic age .....	Eocene	Late Cretaceous	
Average depth (ft.) .....	3,625	5,040	
Average net thickness (ft.) .....	25	5	
Maximum productive area (acres) .....			400

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	30**	26-30†	
So <sub>2</sub> (%) .....			
Sw <sub>1</sub> (%) .....	30**	35-40***	
Sg <sub>1</sub> (%) .....	70**	60-65***	
Permeability to air (md) .....			

RESERVOIR FLUID PROPERTIES

Oil:			
Oil gravity (*API) .....			
Sulfur content (% by wt.) .....			
Initial solution GOR (SCF/STB) .....			
Initial oil FVF (RB/STB) .....			
Bubble point press. (psia) .....			
Viscosity (cp) @ °F .....			
Gas:			
Specific gravity (air = 1.0) .....			
Heating value (Btu/cu. ft.) .....		880-930	
Water:			
Salinity, NaCl (ppm) .....	670	840	
T.D.S. (ppm) .....			
R <sub>w</sub> (ohm/m) (77°F) .....			

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....			
Date started .....			
Date discontinued .....			

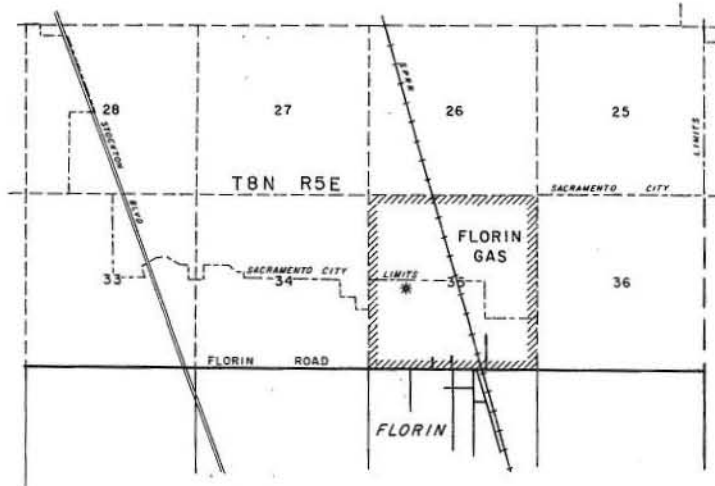
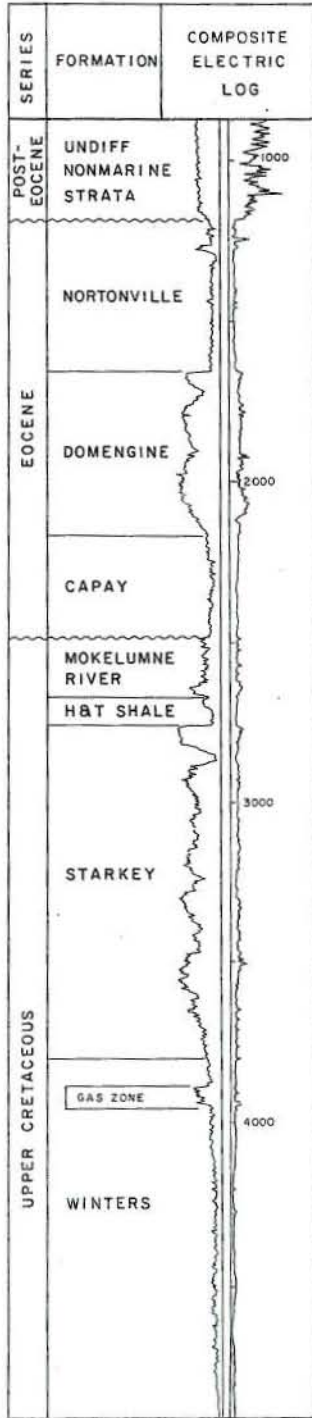
Peak oil production (bbl)			
Year .....			
Peak gas production, net (Mcf)			357,826
Year .....			1951

Base of fresh water (ft.): 2,500

Remarks: Formerly known as Plainfield Ridge Gas field. Commercial gas deliveries began in September 1943. The field was abandoned in 1954 and was reactivated in April 1964 when the deeper zone was discovered.

Selected References: Kirby, J. M., 1943, Fairfield Knolls Gas Field in Geologic Formations and Economic Development of the Oil and Gas Fields of Calif.: Calif. Div. of Mines Bull. 118, p. 599-600.

# FLORIN GAS FIELD



SUBSURFACE DATA NOT AVAILABLE

COUNTY: SACRAMENTO

FLORIN GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Union Oil Company of California "Florin" 1	Same as present	35 8N 5E	MD	4,921 <sup>a/</sup>	Winters	Winters
Deepest well	Same as above	"	"	"	"	"	Late Cretaceous

POOL DATA

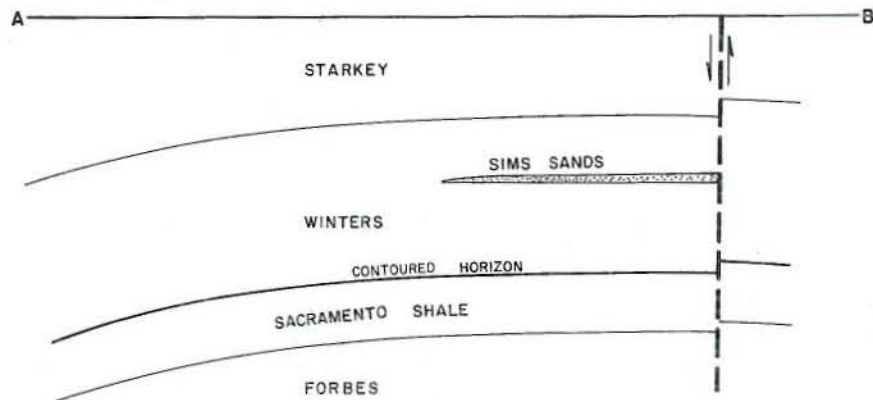
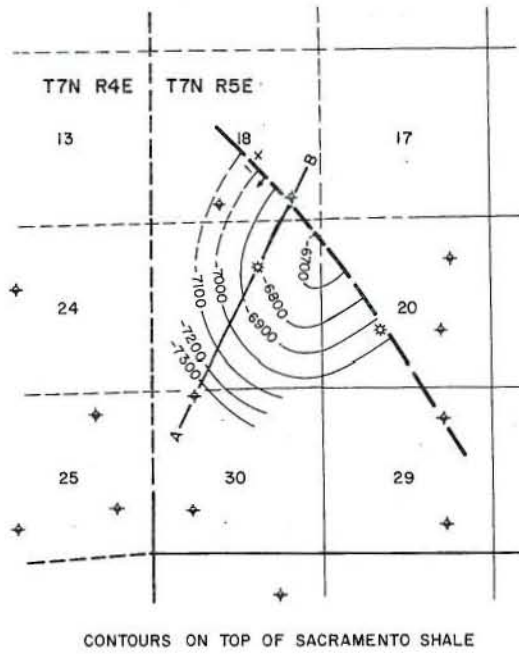
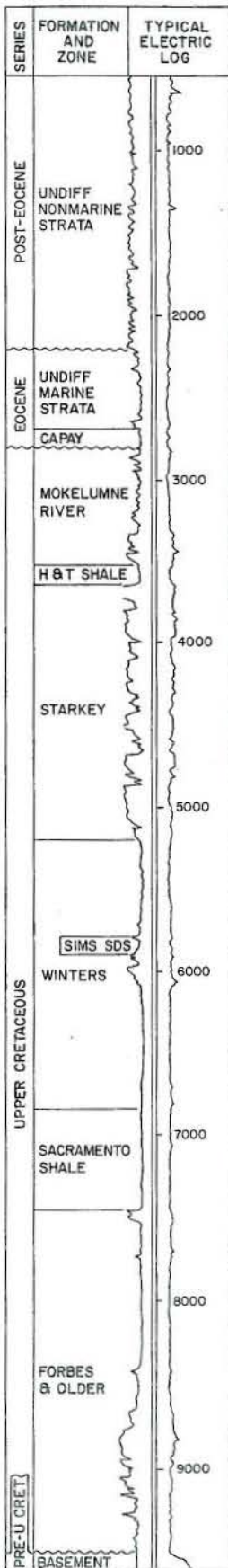
ITEM	WINTERS					FIELD OR AREA DATA
Discovery date .....	December 1977					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	2,326					
Flow pressure (psi) .....	1,102					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,518					
Reservoir temperature (°F) .....	94					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	890-1,000					
Formation .....	Winters					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	3,800					
Average net thickness (ft.) .....	30					
Maximum productive area (acres) .....	40					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	29-33					
So <sub>i</sub> (%) .....	30-35*					
Sw <sub>i</sub> (%) .....	65-70*					
Sg <sub>i</sub> (%) .....	10-27					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.598					
Heating value (Btu/cu. ft.) .....	904					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 1,300

Remarks: The gas is being purchased by a nearby manufacturing plant. Commercial gas deliveries began in July 1980.  
<sup>a/</sup> Directional well, true vertical depth is 4,807 feet.

Selected References:

# FREEPORT GAS FIELD (Abandoned)





COUNTY: SACRAMENTO

**FREEPORT GAS FIELD  
(ABD)**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron U.S.A. Inc. "Sims Community" 1	Standard Oil Company of California "Sims Community" 1	19 7N 5E	MD	7,000	Sims	
Deepest well	Chevron U.S.A. Inc. "Sims Community" 2	Standard Oil Co. of Calif. "Sims Community" 2	18 7N 5E	MD	9,419		basement pre-Lt. Cret.

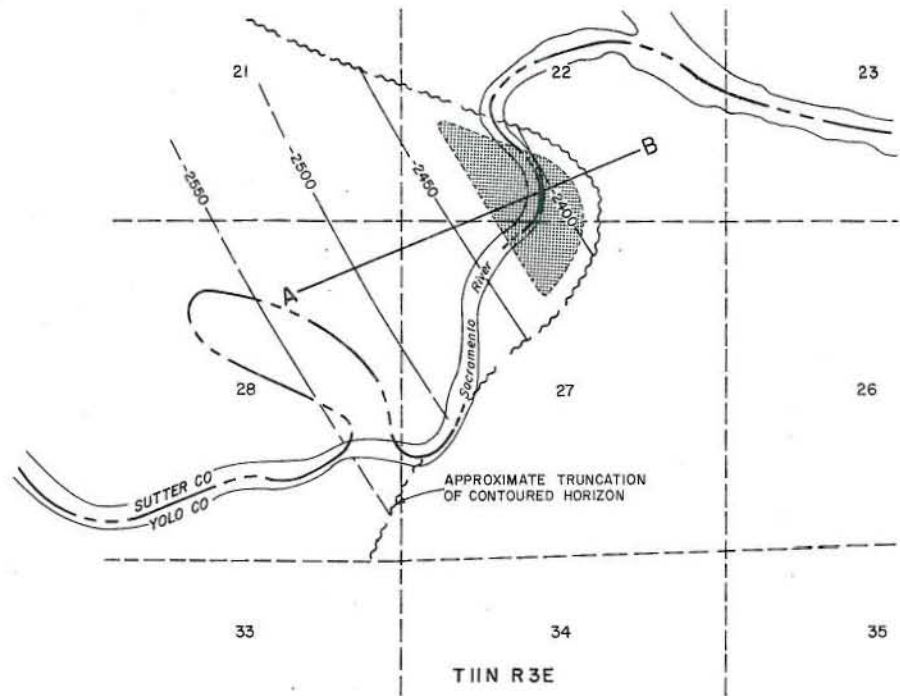
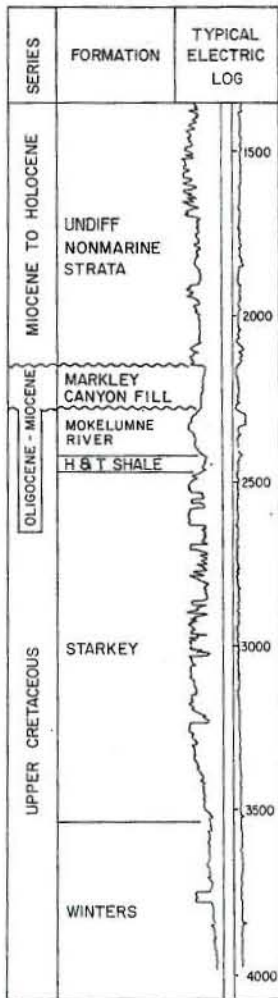
ITEM	POOL DATA				FIELD OR AREA DATA
	SIMS	UNNAMED			
Discovery date .....	May 1952	May 1962			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	9,784	17,300			
Flow pressure (psi) .....	1,582	1,000			
Bean size (in.) .....	1/2	1			
Initial reservoir pressure (psi) .....	2,710	3,600			
Reservoir temperature (°F) .....	124	126			
Initial oil content (STB/ac-ft.) .....					
Initial gas content (MSCF/ac-ft.) .....	1,500-1,800	1,300			
Formation .....	Winters	Forbes			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	5,780	8,040			
Average net thickness (ft.) .....	20	50			
Maximum productive area (acres) .....					
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	28-32 †	22*			
So <sub>2</sub> (%) .....					
Sw <sub>j</sub> (%) .....	30-35 †	40*			
Sg <sub>i</sub> (%) .....	65-70 †	60*			
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (*API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.6061†	.6701†			
Heating value (Btu/cu. ft.) .....	910	735			
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					614,927
Year .....					1953

Base of fresh water (ft.): 650-1,450

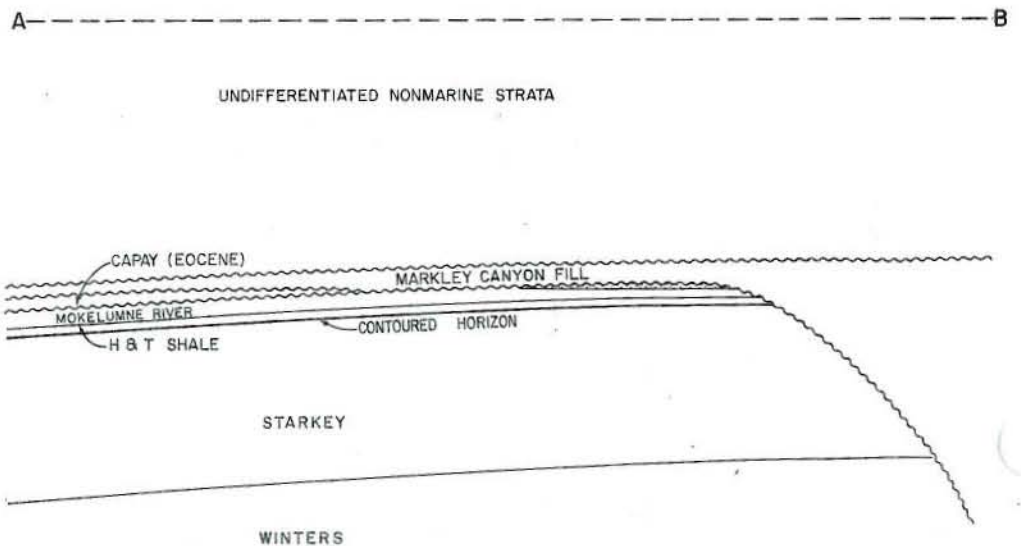
Remarks: Commercial gas deliveries began in January 1953 and ceased in 1976. The field was abandoned in 1977. Two wells were completed and cumulative gas production was 2,647,000 Mcf.

Selected References:

# FREMONT LANDING GAS FIELD



CONTOURS ON TOP OF STARKEY



COUNTY: YOLO

FREMONT LANDING GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Centura, Inc. "Deseret Farms" 2	B. Pete Jackson "Deseret Farms" 2	22 11N 3E	MD	2,603 <sup>a/</sup>	unnamed	
Deepest well	Centura, Inc. "Deseret Farms" 3	Same as present	27 11N 3E	MD	4,500		Winters Late Cretaceous

POOL DATA

ITEM	UNNAMED					FIELD OR AREA DATA
Discovery date .....	October 1976					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,000					
Flow pressure (psi) .....	900					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,000					
Reservoir temperature (°F) .....	121					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	600-670					
Formation .....	Mokelumne River					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	2,320					
Average net thickness (ft.) .....	25					
Maximum productive area (acres) .....	40					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	32-34†					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	26-30†					
Sg <sub>g</sub> (%) .....	70-74†					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.6571†					
Heating value (Btu/cu. ft.) .....	820					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

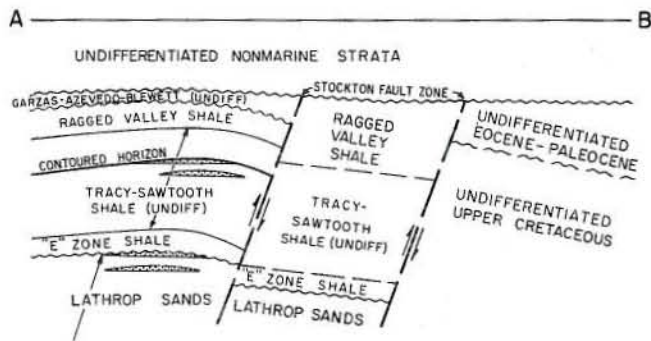
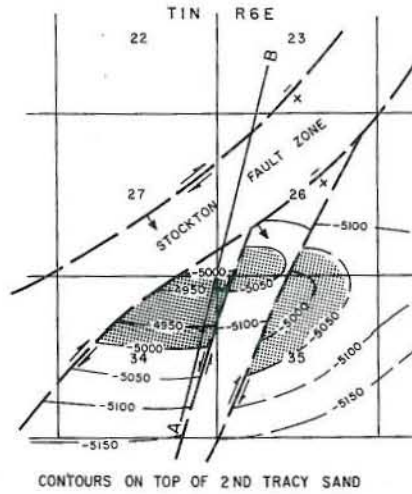
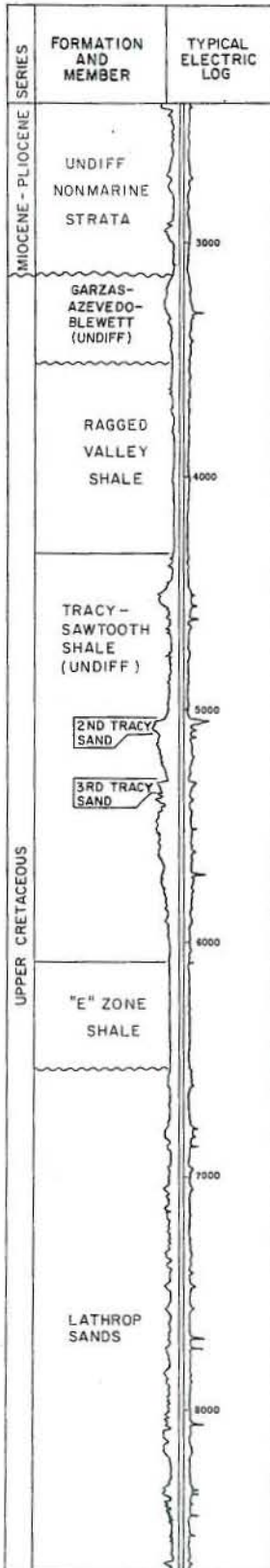
Peak oil production (bbi)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 1,400

Remarks: Commercial gas deliveries have not yet begun.  
<sup>a/</sup> Directional well, true vertical depth is 2,490 feet.

Selected References:

# FRENCH CAMP GAS FIELD



COUNTY: SAN JOAQUIN

FRENCH CAMP GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Laymac Corp. "Reynolds & Carver-West" 1	Ferguson & Bosworth "Reynolds & Carver-West" 1	26 1N 6E	MD	8,750	Tracy	Lathrop sands Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

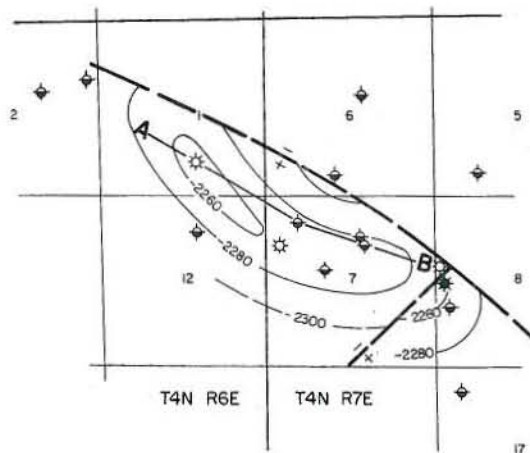
ITEM	POOL DATA			FIELD OR AREA DATA
	2ND TRACY	3RD TRACY	LATHROP	
Discovery date .....	March 1967	March 1967	October 1967	
Initial production rates				
Oil (bbl/day) .....	a/ 7,550	a/	8,300	
Gas (Mcf/day) .....	1,250	a/	1,300	
Flow pressure (psi) .....	1/2	a/	1/2	
Bean size (in.) .....				
Initial reservoir pressure (psi) .....	2,320	2,420	4,990	
Reservoir temperature (°F) .....	119	123	146	
Initial oil content (STB/ac-ft.) .....	450-900	790-1,000	1,200-1,600	
Initial gas content (MSCF/ac-ft.) .....	Tracy-Sawtooth-Shale Late Cretaceous	Tracy-Sawtooth-Shale Late Cretaceous	Lathrop sands Late Cretaceous	
Formation .....				
Geologic age .....				
Average depth (ft.) .....	5,000	5,308	6,925	
Average net thickness (ft.) .....	30	17	45	
Maximum productive area (acres) .....				400
<b>RESERVOIR ROCK PROPERTIES</b>				
Porosity (%) .....	22-26 †	20-24 †	18-22***	
So <sub>2</sub> (%) .....				
Sw <sub>1</sub> (%) .....	35-40 †	40-45 †	40-45***	
Sg <sub>1</sub> (%) .....	60-65 †	55-60 †	55-60***	
Permeability to air (md) .....				
<b>RESERVOIR FLUID PROPERTIES</b>				
Oil:				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	.666	.666	.639 ††	
Heating value (Btu/cu. ft.) .....	760	770	830	
Water:				
Salinity, NaCl (ppm) .....	14,000	14,000	24,100	
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				
<b>ENHANCED RECOVERY PROJECTS</b>				
Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				
Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				
Year .....				2,101,502 1970

Base of fresh water (ft.): 100

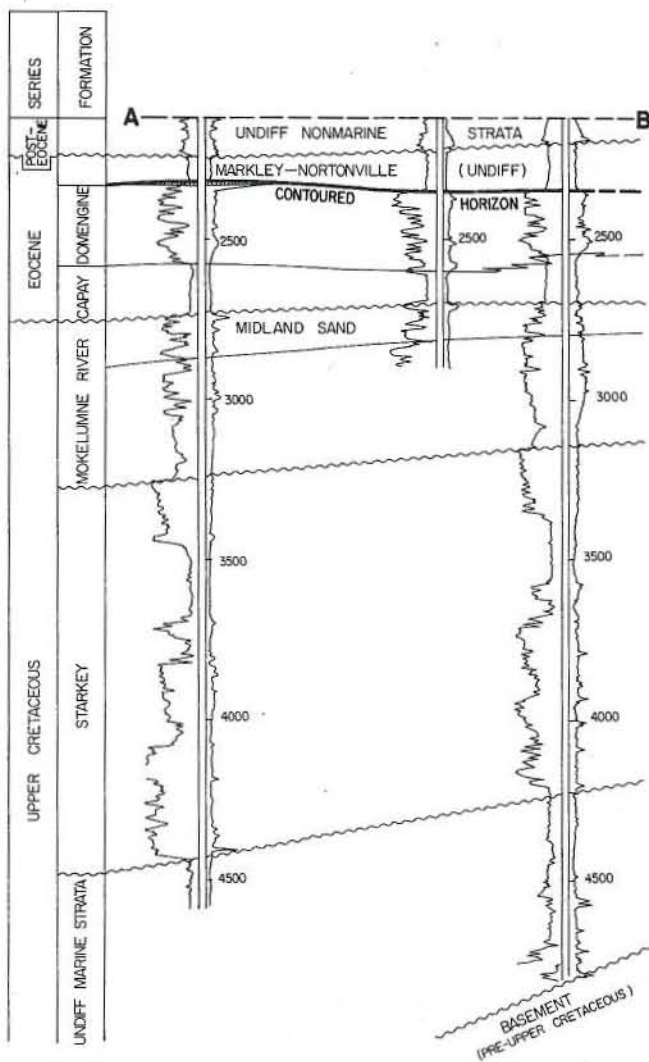
Remarks: Commercial gas deliveries began in October 1969.  
a/ Commingled production from the 2nd and 3rd Tracy zones.

Selected References:

# GALT GAS FIELD



CONTOURS ON TOP OF DOMENGINE



COUNTY: SAN JOAQUIN

GALT GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess Corp., Opr. "Community" 1-1	Bankline Oil Co. "Community" 1-1	1 4N 6E	MD	5,765	Domengine	basement (gneiss) pre-Lt. Cret.
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	POOL DATA				FIELD OR AREA DATA
	DOMENGINE	UNNAMED			
Discovery date .....	April 1943	November 1970			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	7,765	1,295			
Flow pressure (psi) .....	692	926			
Bean size (in.) .....	3/4	1/4			
Initial reservoir pressure (psi) .....	1,004	936			
Reservoir temperature (°F) .....	96	97			
Initial oil content (STB/ac.-ft.) .....	560-670	330			
Initial gas content (MSCF/ac.-ft.) .....					
Formation .....	Domengine	Domengine			
Geologic age .....	Eocene	Eocene			
Average depth (ft.) .....	2,330	2,433			
Average net thickness (ft.) .....	15	5			
Maximum productive area (acres) .....					140

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	25-30	20			
S <sub>oi</sub> (%) .....					
S <sub>wi</sub> (%) .....	25	40			
S <sub>gi</sub> (%) .....	75	60			
Permeability to air (md) .....	15-70				

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.690	.666			
Heating value (Btu/cu. ft.) .....	680	752			
Water:					
Salinity, NaCl (ppm) .....	3,938				
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

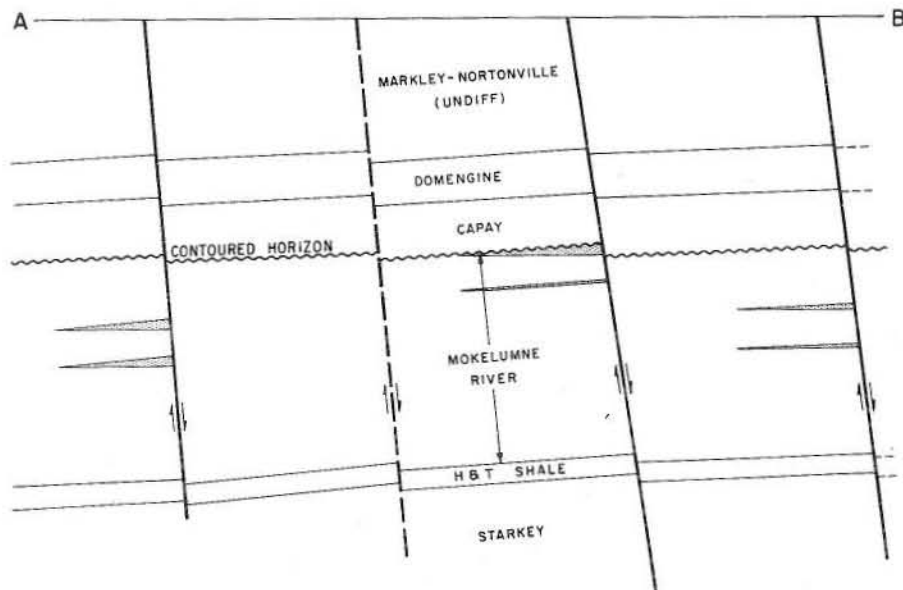
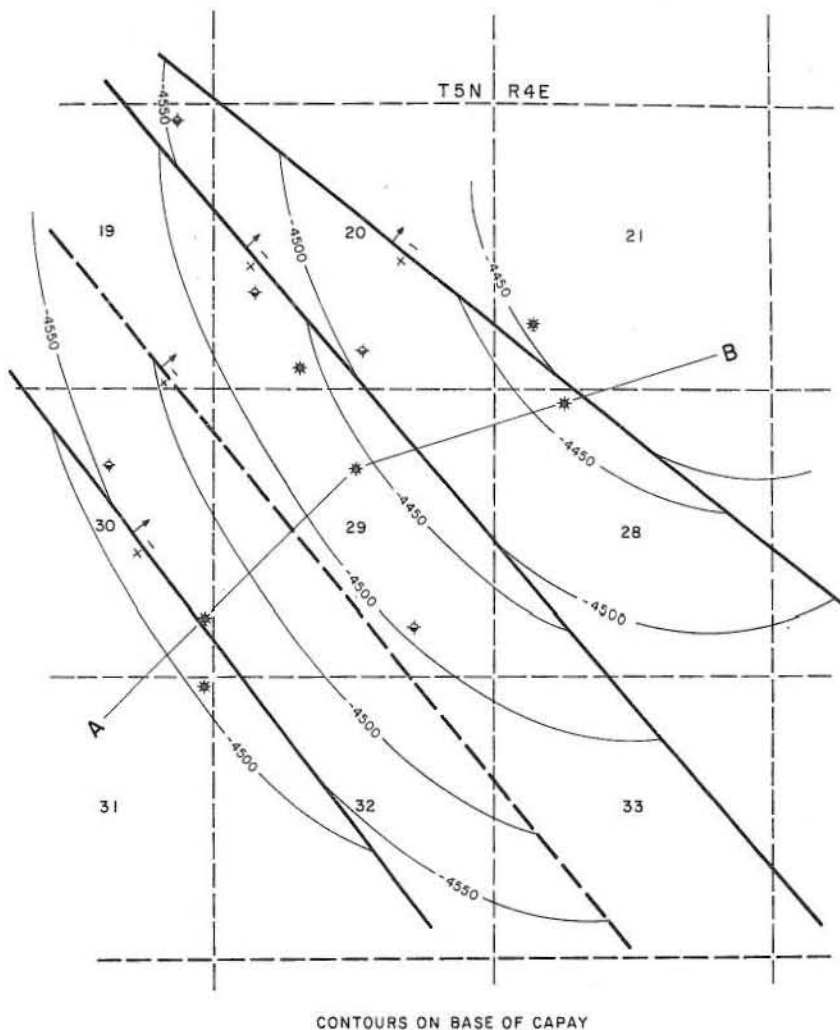
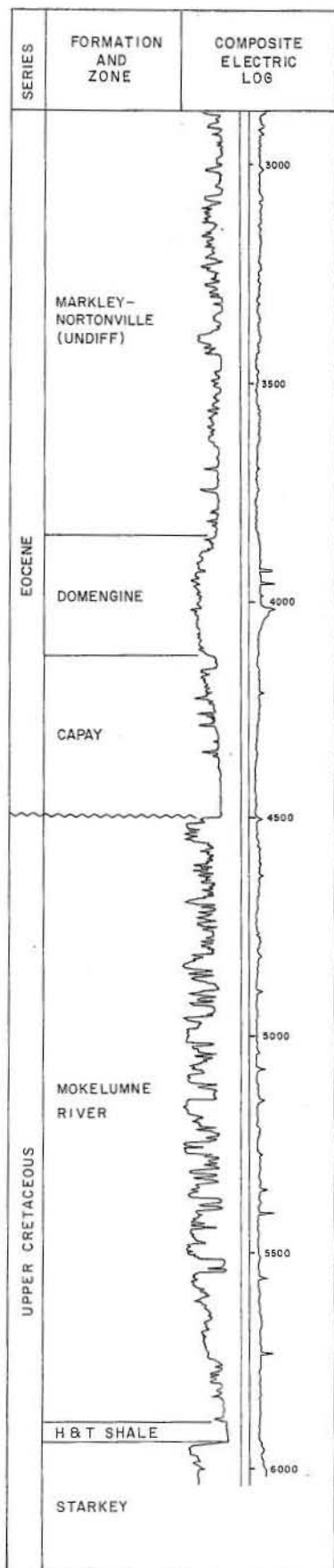
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					261,063
Year .....					1956

Base of fresh water (ft.): 1,850

Remarks: Commercial gas deliveries began in October 1946.

Selected References: Huey, W. F., 1957, Galt Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 43, No. 1.

# GRAND ISLAND GAS FIELD





COUNTY: SACRAMENTO

GRAND ISLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Nahama & Weagant, Inc. "Garin GU" 1	Amerada Petroleum Corp. "Garin Gas Unit" 1	29 5N 4E	MD	6,565	unnamed	
Deepest well	Atlantic Oil Co. "Genignani" 2	Same as present	31 5N 4E	MD	8,950		Winters Late Cretaceous

POOL DATA

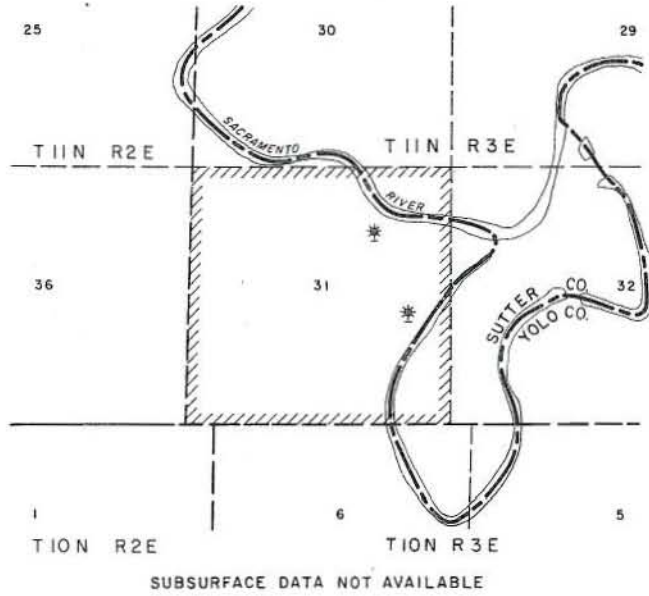
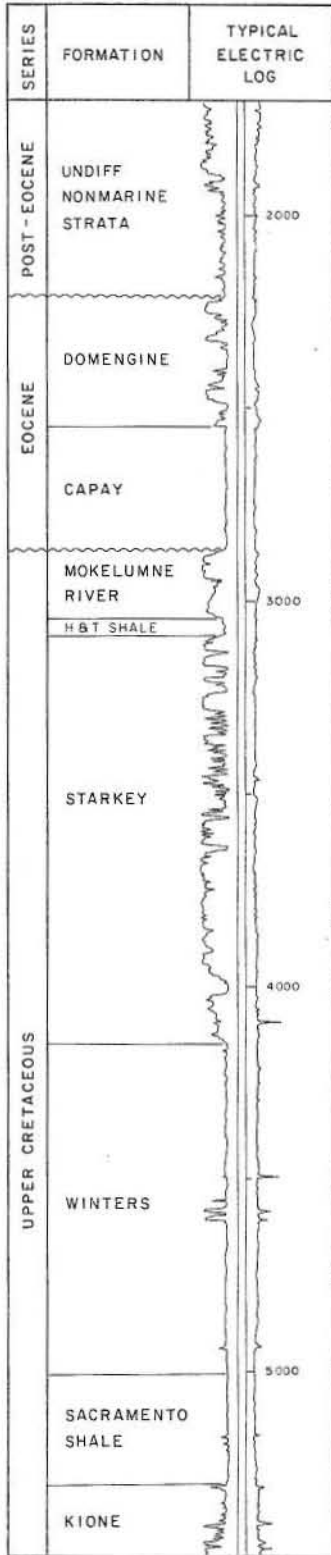
ITEM	UNNAMED		FIELD OR AREA DATA		
	UNNAMED	UNNAMED			
Discovery date .....	August 1960	November 1960			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	2,780	1,300			
Flow pressure (psi) .....	1,730	1,850			
Bean size (in.) .....	1/4	3/16			
Initial reservoir pressure (psi) .....	2,010	2,200			
Reservoir temperature (°F) .....	105	110			
Initial oil content (STB/ac.-ft.) .....	1,100-1,400	1,200-1,500			
Initial gas content (MSCF/ac.-ft.) .....					
Formation .....	Mokelumne River Late Cretaceous	Mokelumne River Late Cretaceous			
Geologic age .....					
Average depth (ft.) .....	4,672	5,071			
Average net thickness (ft.) .....	5	5			
Maximum productive area (acres) .....					460
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	28-32†	28-32†			
So <sub>g</sub> (%) .....					
Sw <sub>i</sub> (%) .....	35-40†	35-40†			
Sg <sub>g</sub> (%) .....	60-65†	60-65†			
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.570††	.570††			
Heating value (Btu/cu. ft.) .....	975	975			
Water:					
Salinity, NaCl (ppm) .....	9,900	16,700			
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					580,078 1976

Base of fresh water (ft.): 2,000

Remarks: Commercial production began in June 1976.

Selected References:

# GRAYS BEND GAS FIELD



COUNTY: YOLO

GRAYS BEND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Hilliard Oil & Gas, Inc. "Hershey A" 1	Same as present	31 11N 2E	MD	a/	unnamed	Winters Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	INNAMED				FIELD OR AREA DATA
Discovery date .....	January 1980				
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	Confidential				
Flow pressure (psi) .....	Confidential				
Bean size (in.) .....	Confidential				
Initial reservoir pressure (psi) .....	1,969				
Reservoir temperature (°F) .....	105				
Initial oil content (STB/ac.-ft.) .....	740-1,025				
Initial gas content (MSCF/ac.-ft.) .....	Winters				
Formation .....	Late Cretaceous				
Geologic age .....	4,500				
Average depth (ft.) .....	20				
Average net thickness (ft.) .....					
Maximum productive area (acres) .....					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	22-28***				
S <sub>oi</sub> (%) .....					
S <sub>wi</sub> (%) .....	40-45***				
S <sub>gi</sub> (%) .....	55-60***				
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.626				
Heating value (Btu/cu. ft.) .....	842				
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

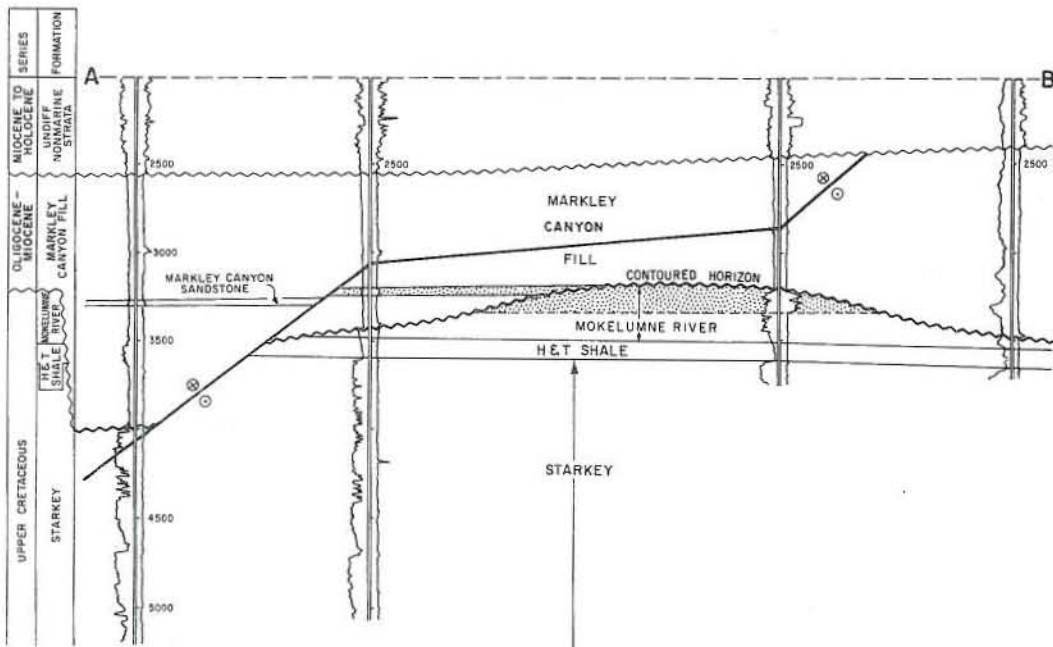
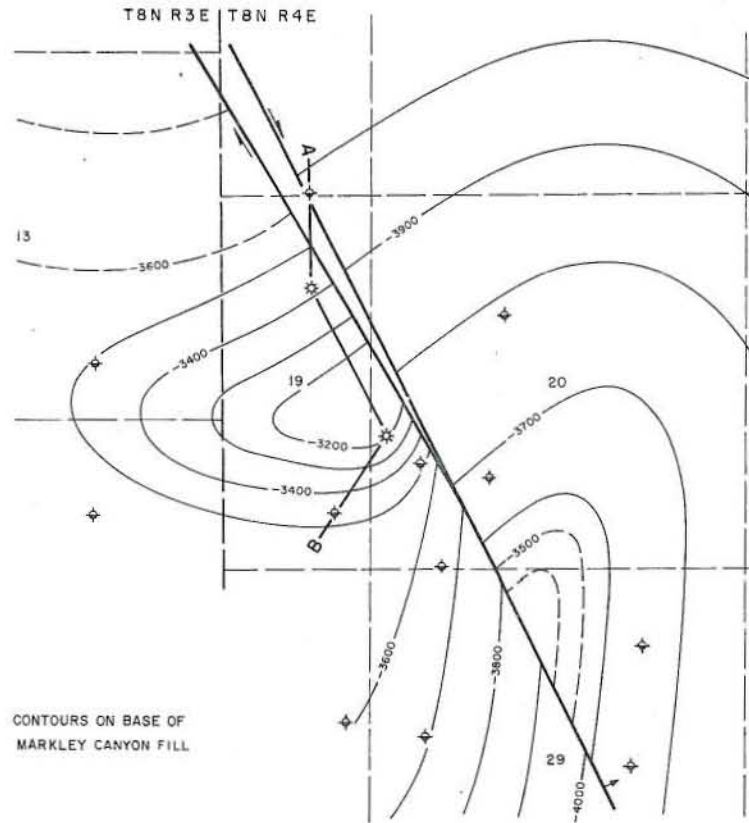
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					

Base of fresh water (ft.): 1,400

Remarks: Commercial gas deliveries have not yet begun.  
a/ Confidential.

Selected References:

# GREENS LAKE GAS FIELD (Abandoned)



COUNTY: YOLO

**GREENS LAKE GAS FIELD  
(ABD)**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Nahama & Weagant, Inc. "Greens Lake Unit 1" 1	The Superior Oil Co. "Greens Lake Unit" 1-1	19 8N 4E	MD	5,062	Markley Canyon fill	
Deepest well	Nahama & Weagant, Inc. "Greens Lake Unit 1" 2	The Superior Oil Co. "Greens Lake Unit" 1-2	18 8N 4E	MD	5,200		Starkey Late Cretaceous

**POOL DATA**

ITEM					FIELD OR AREA DATA
	MARKLEY CANYON FILL	MOKELUNNE RIVER			
Discovery date .....	June 1969	April 1970			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	1,097	6,959			
Flow pressure (psi) .....	760	1,202			
Bean size (in.) .....	1/4	1/2			
Initial reservoir pressure (psi) .....	1,440	1,460			
Reservoir temperature (°F) .....	130	120			
Initial oil content (STB/ac-ft.) .....	850	620			
Initial gas content (MSCF/ac-ft.) .....					
Formation .....	Markley Canyon fill	Mokelumne River			
Geologic age .....	Oligocene-Miocene	Upper Cretaceous			
Average depth (ft.) .....	3,200	3,200			
Average net thickness (ft.) .....	40	110			
Maximum productive area (acres) .....					220

**RESERVOIR ROCK PROPERTIES**

Porosity (%) .....	30	25			
So <sub>g</sub> (%) .....	35	45			
Sw <sub>j</sub> (%) .....	65	55			
Sg <sub>g</sub> (%) .....					
Permeability to air (md) .....					

**RESERVOIR FLUID PROPERTIES**

Oil:					
Oil gravity (*API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.628	.624			
Heating value (Btu/cu. ft.) .....	820	840			
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

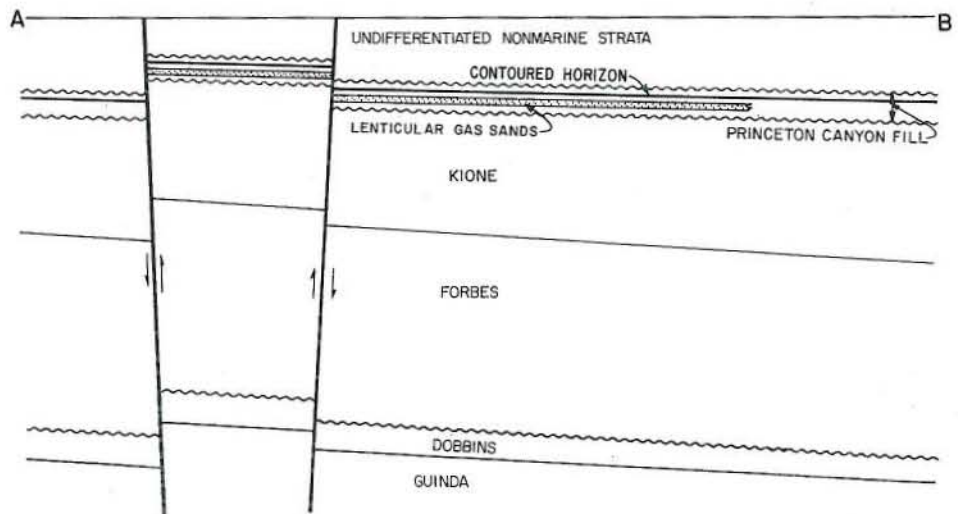
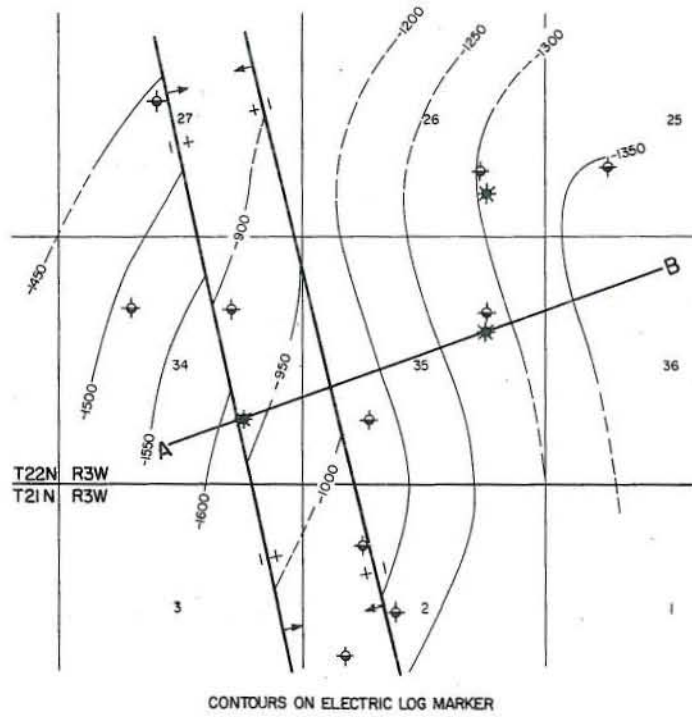
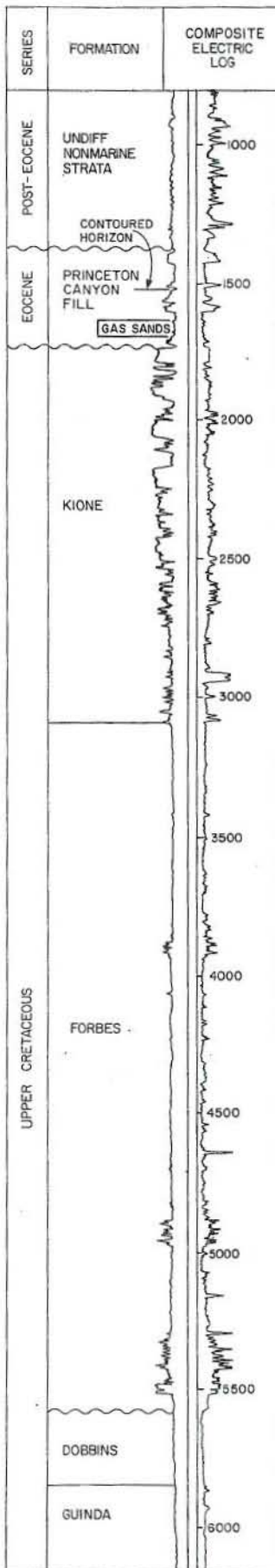
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					215,130
Year .....					1973

Base of fresh water (ft.): 2,000

Remarks: Commercial gas production began in 1973. The field was abandoned in 1976. Two wells were completed and cumulative gas production was 337,669 Mcf.

Selected References: Curtin, R. F., 1972, Greens Lake Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 58, No. 1.

# GREENWOOD GAS FIELD



COUNTY: GLENN

GREENWOOD GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Energy Production and Sales Co. "Livingston" 1	Same as present	35 22N 3W	MD	3,150	Eocene	
Deepest well	Union Oil Company of California "UTGM Orland" A-1	Same as present	35 22N 3W	MD	6,137		Guinda Late Cretaceous

POOL DATA

ITEM	EOCENE					FIELD OR AREA DATA
Discovery date .....	August 1977					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	150					
Flow pressure (psi) .....	410					
Bean size (in.) .....	1/8					
Initial reservoir pressure (psi) .....	600					
Reservoir temperature (°F) .....	96					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	380					
Formation .....	Princeton Cyn. fill					
Geologic age .....	Eocene					
Average depth (ft.) .....	1,460					
Average net thickness (ft.) .....	10					
Maximum productive area (acres) .....	100					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	30*					
S <sub>oi</sub> (%) .....						
S <sub>wi</sub> (%) .....	30*					
S <sub>gi</sub> (%) .....	70*					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.559					
Heating value (Btu/cu. ft.) .....	1,005					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....	31,368 1980					

Base of fresh water (ft.): 920

Remarks: Commercial gas production began in 1979.

Selected References:





COUNTY: GLENN

GREENWOOD, SOUTH, GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Energy Production and Sales Co. "Rehse" 1	Same as present	14 21N 3W	MD	3,000	Eocene	
Deepest well	Shell Oil Co. "Rehse et al" 1-14	Same as present	14 21N 3W	MD	8,346		Guinda Late Cretaceous

POOL DATA

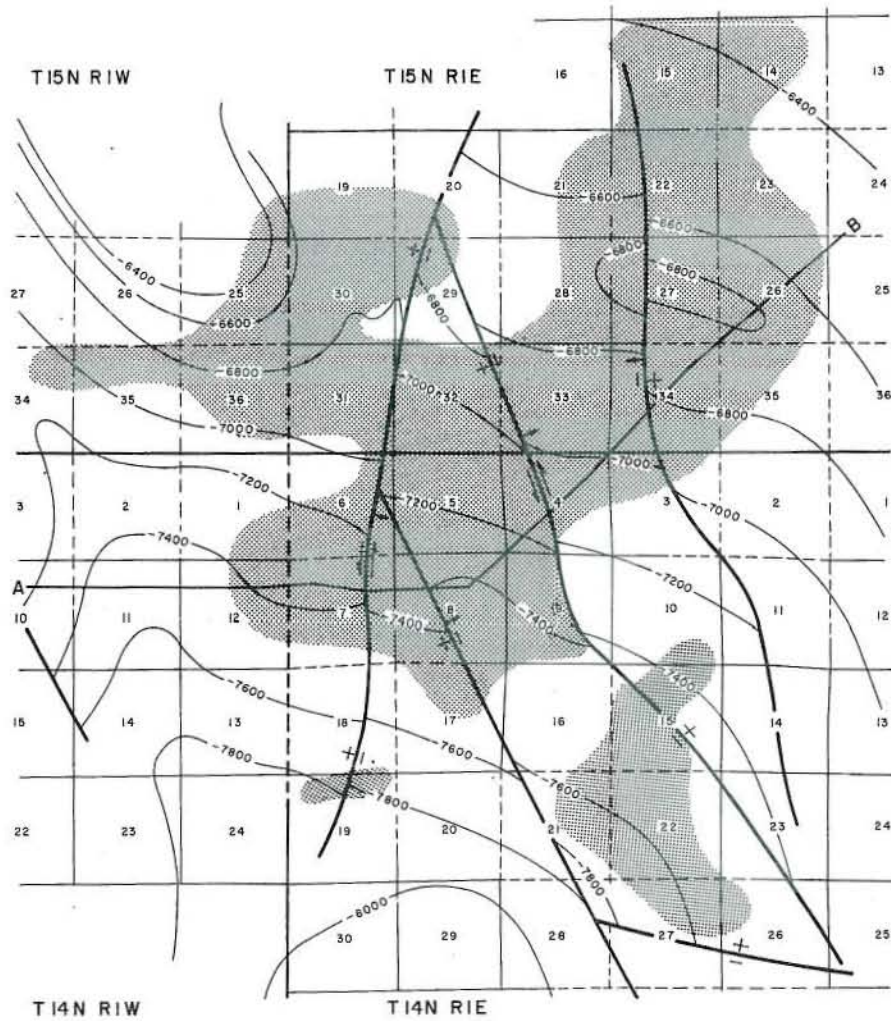
ITEM	EOCENE					FIELD OR AREA DATA
Discovery date .....	October 1977					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	511					
Flow pressure (psi) .....	586					
Bean size (in.) .....	3/16					
Initial reservoir pressure (psi) .....	639					
Reservoir temperature (°F) .....	99					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	390					
Formation .....	Princeton Cyn. fill					
Geologic age .....	Eocene					
Average depth (ft.) .....	1,410					
Average net thickness (ft.) .....	20					
Maximum productive area (acres) .....	80					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	30*					
So <sub>2</sub> (%) .....	30*					
Sw <sub>2</sub> (%) .....	70*					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.587					
Heating value (Btu/cu. ft.) .....	935					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	145,970					
Year .....	1980					

Base of fresh water (ft.): 1,040

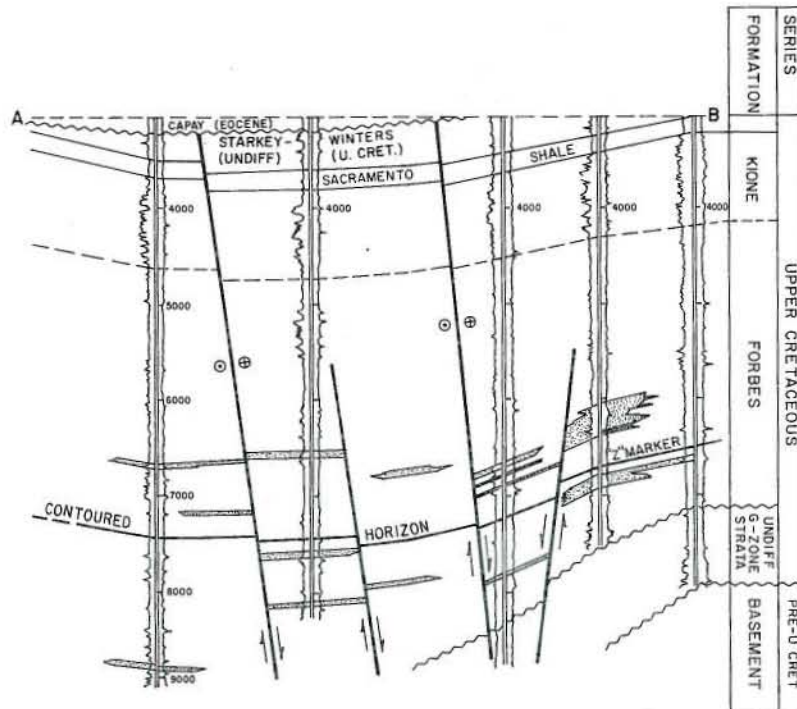
Remarks: Commercial gas deliveries began in January 1980.

Selected References:

# GRIMES GAS FIELD



CONTOURS ON Z ELECTRIC LOG MARKER



COUNTY: COLUSA and SUTTER

GRIMES GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Mobil Oil Corp. "Grimes Operating Unit 7" 2	Cameron Oil Co. "Cameron-Armstrong" 1	7 14N 2W	MD	7,528	Forbes	
Deepest well	Buttes Resources Co. "Unit 25" 4	Patrick A. Doheny "Unit 25" 4	26 15N 1W	MD	9,485		Forbes Late Cretaceous

POOL DATA

ITEM	FORBES					FIELD OR AREA DATA
Discovery date .....	January 1960					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	2,820					
Flow pressure (psi) .....	1,040					
Bean size (in.) .....	3/8					
Initial reservoir pressure (psi) .....	2,780-6,000					
Reservoir temperature (°F) .....	152-164					
Initial oil content (STB/ac-ft.) .....	1,300-2,200					
Initial gas content (MSCF/ac-ft.) .....	923					
Formation .....	Forbes					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	4,900-8,800					
Average net thickness (ft.) .....	5-50					
Maximum productive area (acres) .....	14,990					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	25-30					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	35-40					
Sg <sub>g</sub> (%) .....	60-65					
Permeability to air (md) .....	15-70					

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.56					
Heating value (Btu/cu. ft.) .....	1,007					
Water:						
Salinity, NaCl (ppm) .....	13,688					
T.D.S. (ppm) .....	16,823					
R <sub>w</sub> (ohm/m) (77°F) .....	0.40					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

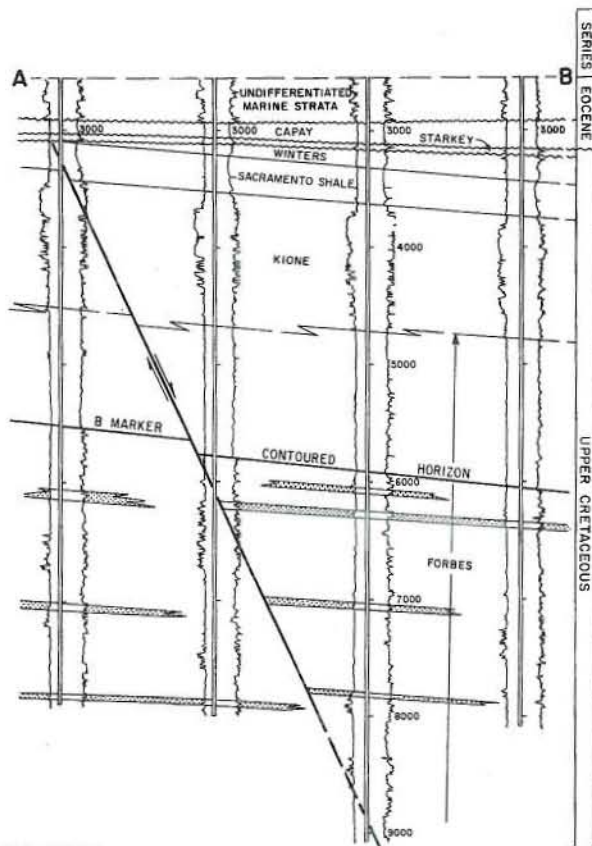
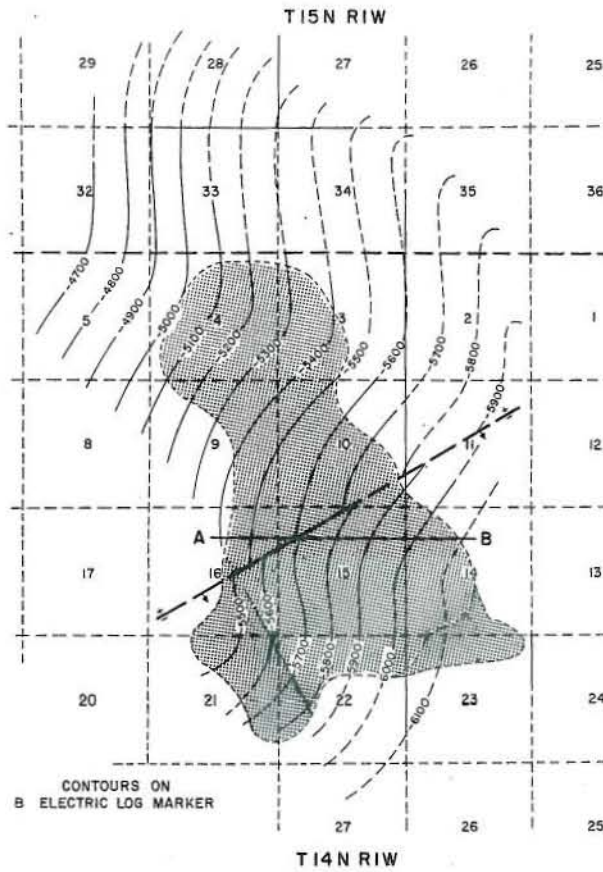
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	33,023,637					
Year .....	1966					

Base of fresh water (ft.): 1,100

Remarks: Commercial gas deliveries began in December 1961. Abnormally high pressure gradient at depth. Many of the gas sand stringers have been given local names by operators.

Selected References:

# WEST GRIMES GAS FIELD



COUNTY: COLUSA

GRIMES, WEST, GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Occidental Petroleum Corp. "Sachreiter" 1	Same as present	4 14N 1W	MD	8,263	Forbes	
Deepest well	Getty Oil Co. "Balsdon" 2	Tidewater Oil Co. "Balsdon" 2	22 14N 1W	MD	9,585		Forbes Late Cretaceous

POOL DATA

ITEM	FORBES					FIELD OR AREA DATA
Discovery date .....	December 1960					
Initial production rates						
Oil (bbl/day) .....	14,730					
Gas (Mcf/day) .....	2,300					
Flow pressure (psi) .....	3/4					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	3,055-5,425					
Reservoir temperature (°F) .....	120-132					
Initial oil content (STB/ac.-ft.) .....	1,400-1,700					
Initial gas content (MSCF/ac.-ft.) .....	Forbes					
Formation .....	Late Cretaceous					
Geologic age .....						
Average depth (ft.) .....	6,050-7,850					
Average net thickness (ft.) .....	3-35					
Maximum productive area (acres) .....	3,350					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	22-28					
So <sub>g</sub> (%) .....	35-46					
Sw <sub>g</sub> (%) .....	54-65					
Sg <sub>g</sub> (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.570					
Heating value (Btu/cu. ft.) .....	970-1,010					
Water:						
Salinity, NaCl (ppm) .....	16,200-25,300					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

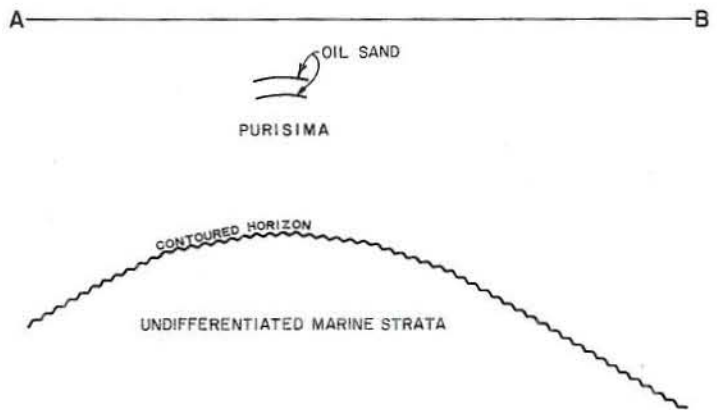
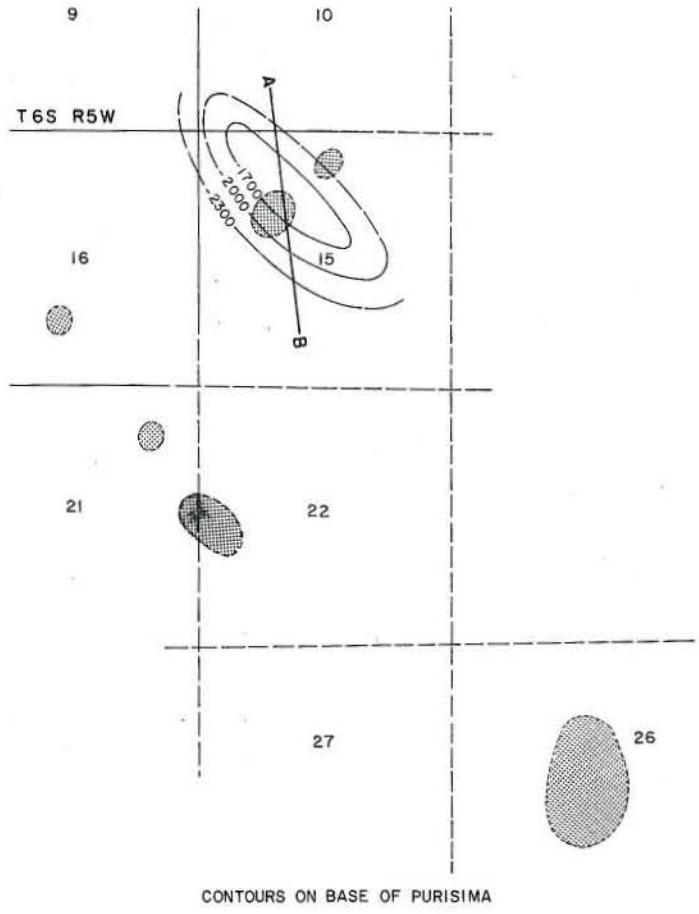
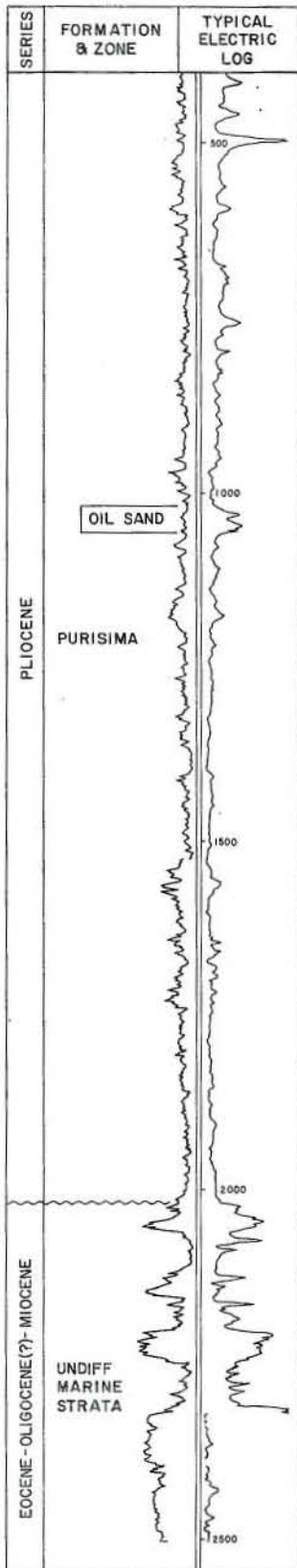
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl) .....						
Year .....						
Peak gas production, net (Mcf) .....	5,921,389					
Year .....	1964					

Base of fresh water (ft.): 1,400-2,450

Remarks: Commercial gas deliveries began in December 1961.

Selected References: Beecroft, G. W., 1962, West Grimes Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 48, No. 2.

# HALF MOON BAY OIL FIELD



COUNTY: SAN MATEO

HALF MOON BAY OIL FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	J. Berger (?)	Same as present	15 6S 5W	MD	(?)	Purisima	
Deepest well	Wilshire Oil Co., Inc. "Cowell" 1	Same as present	21 6S 5W	MD	7,982		undiff. marine Eocene

POOL DATA

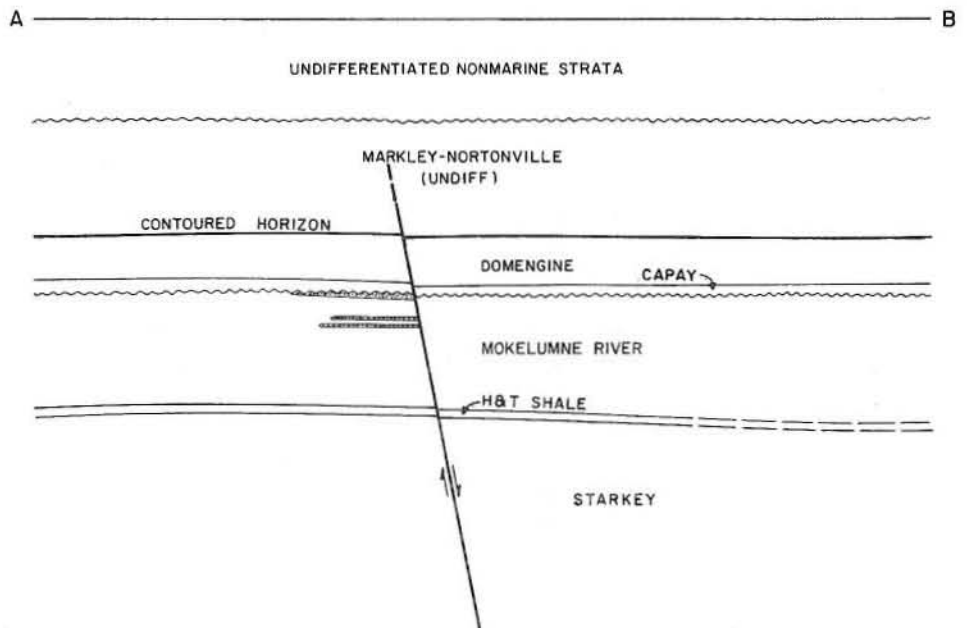
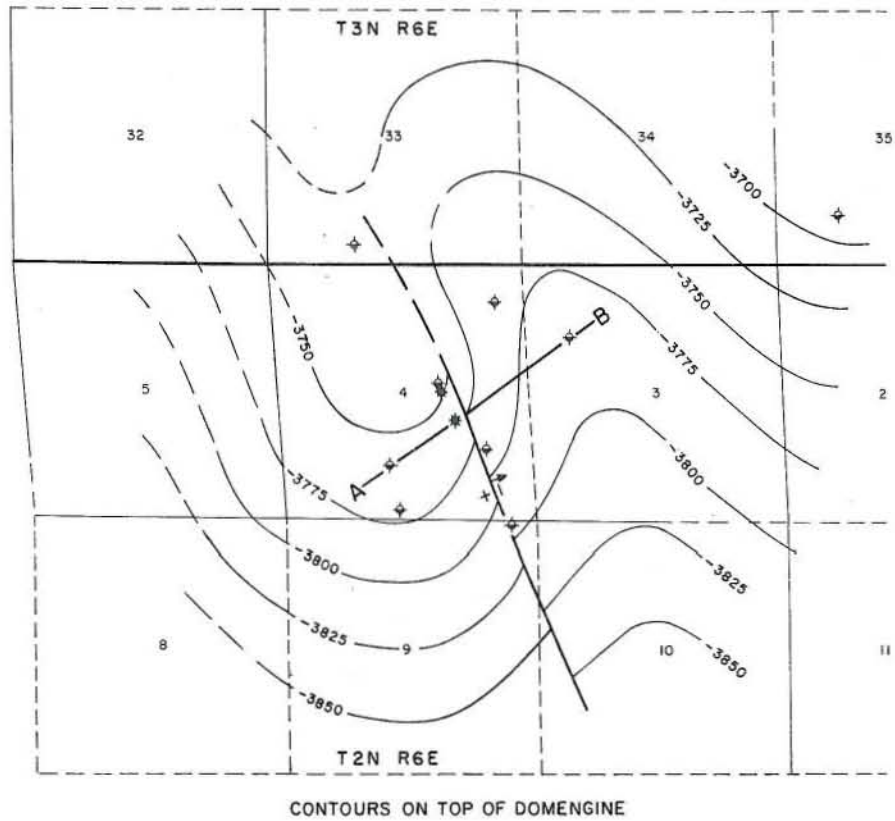
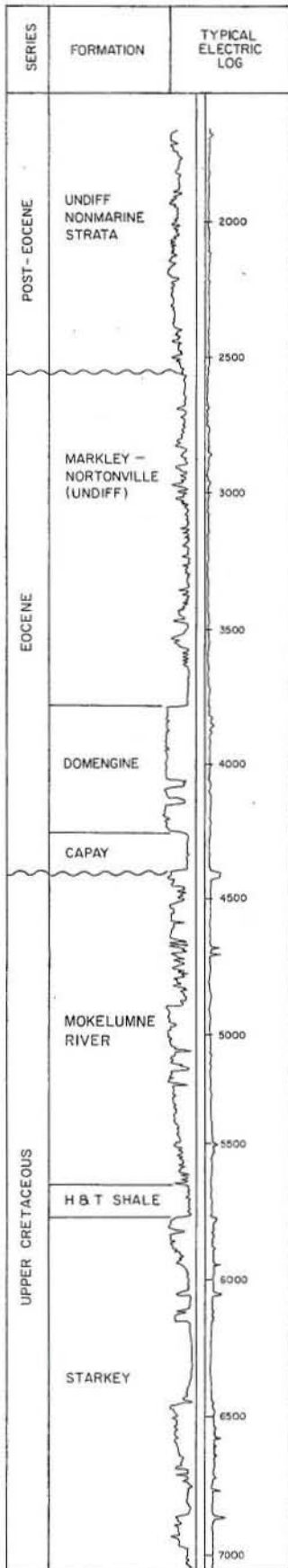
ITEM	PURISIMA					FIELD OR AREA DATA
Discovery date .....	1890 ±					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....						
Flow pressure (psi) .....						
Bean size (in.) .....						
Initial reservoir pressure (psi) .....						
Reservoir temperature (°F) .....						
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Purisima					
Geologic age .....	Pliocene					
Average depth (ft.) .....	800-2,700					
Average net thickness (ft.) .....	50					
Maximum productive area (acres) .....	155					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	28-34					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....						
Sg <sub>i</sub> (%) .....	1-40					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:	18-45					
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....						
Heating value (Btu/cu. ft.) .....						
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbi)	unknown					
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 100

Remarks:

Selected References: Crandall, R. R., 1943, Half Moon Bay District in Geologic Formations and Economic Development of the Oil and Gas Fields of Calif.: Calif. Div. of Mines Bull. 118, p. 478-480.

# HARTE GAS FIELD





COUNTY: SAN JOAQUIN

HARTE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Tri-Valley Oil & Gas Co. "Dawang" 1	Same as present	4 2N 6E	MD	6,940	Mokelumne River	
Deepest well	Tenneco West, Inc. "KCY-Reserve Podesta Unit" 1	Kern County Land Co., Oper. "KCY-Reserve Podesta Unit" 1	4 2N 6E	MD	8,785		Sacramento shale Late Cretaceous

POOL DATA

ITEM					FIELD OR AREA DATA
	MOKELUMNE RIVER	STARKEY			
Discovery date .....	September 1975	December 1976			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	1,443	1,250			
Flow pressure (psi) .....	1,672	2,250			
Bean size (in.) .....	14/64	10/64			
Initial reservoir pressure (psi) .....	2,032	3,488			
Reservoir temperature (°F) .....	119-122	151			
Initial oil content (STB/ac-ft.) .....					
Initial gas content (MSCF/ac-ft.) .....	1,300	2,000			
Formation .....	Mokelumne River	Starkey			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	4,400-4,700	6,970			
Average net thickness (ft.) .....	10-25	10			
Maximum productive area (acres) .....					60

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	30**	30**			
So <sub>g</sub> (%) .....					
Sw <sub>i</sub> (%) .....	30**	30**			
Sg <sub>g</sub> (%) .....	70**	70**			
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.603	.581			
Heating value (Btu/cu. ft.) .....	902	961			
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

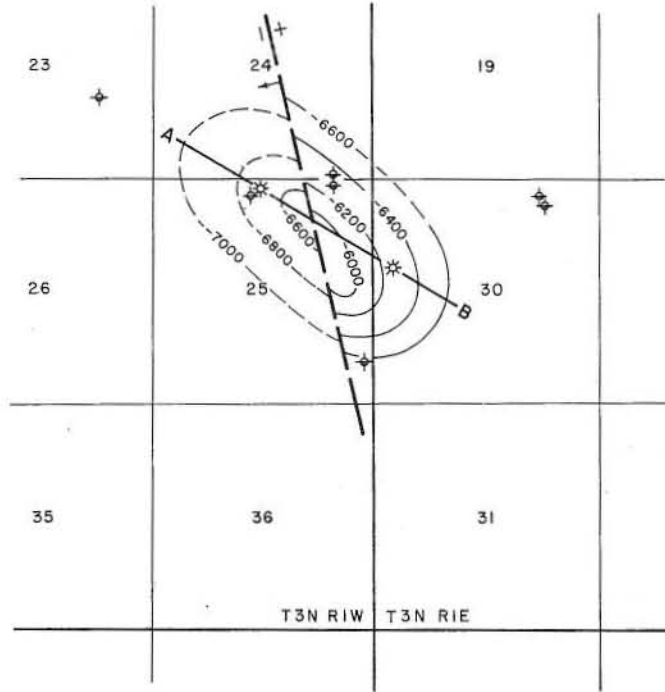
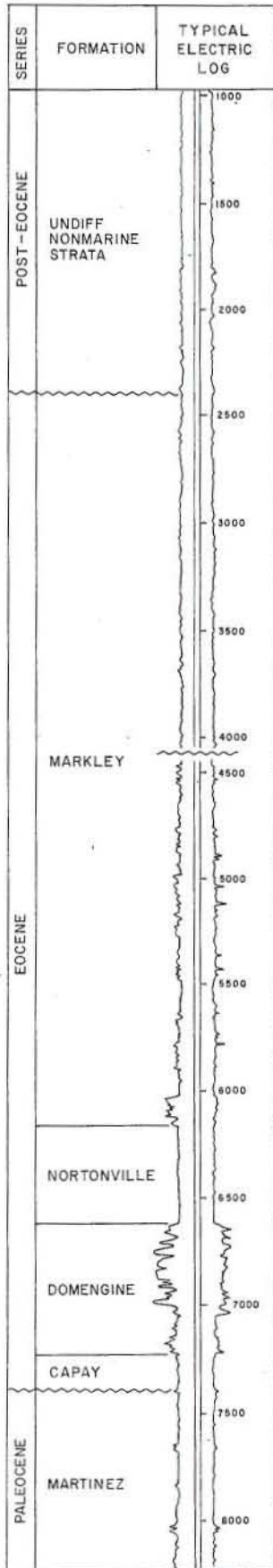
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					233,541
Year .....					1978

Base of fresh water (ft.): 600-700

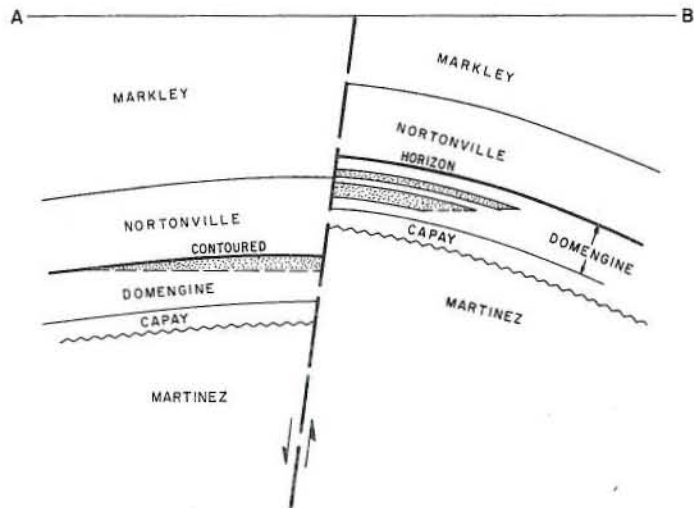
Remarks: Commercial gas deliveries began in March 1976.

Selected References:

# HONKER GAS FIELD (Abandoned)



CONTOURS ON TOP OF DOMENGINE



COUNTY: SOLANO

HONKER GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron U.S.A. Inc. "Honker Community" 1-A	Standard Oil Co. of Calif. "Honker Community" 1-A	25 3N 1W	MD	8,304	Domengine	
Deepest well	Aminoil USA, Inc. "Standard-King" 1	Signal Oil & Gas Co. "Standard-King" 1	24 3N 1W	MD	11,070 <sup>a/</sup>		undiff. marine Late Cretaceous

POOL DATA

ITEM	DOMENGINE					FIELD OR AREA DATA
Discovery date .....	April 1944					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	3,200					
Flow pressure (psi) .....	2,229					
Bean size (in.) .....	1 1/4					
Initial reservoir pressure (psi) .....	3,200					
Reservoir temperature (°F) .....	151					
Initial oil content (STB/ac.-ft.) .....	920-1,200					
Initial gas content (MSCF/ac.-ft.) .....	Domengine					
Formation .....	Eocene					
Geologic age .....	6,500					
Average depth (ft.) .....	180					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	20					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	18-22***					
So <sub>g</sub> (%) .....	40-45***					
Sw <sub>g</sub> (%) .....	55-60***					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.597††					
Heating value (Btu/cu. ft.) .....	1,040					
Water:						
Salinity, NaCl (ppm) .....	12,300					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl) Year .....						
Peak gas production, net (Mcf) Year .....	277,436 1947					

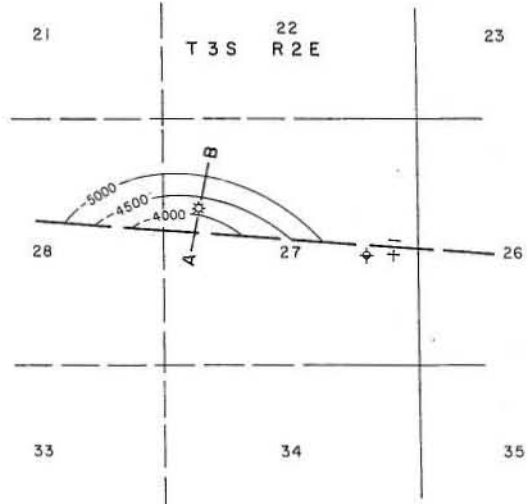
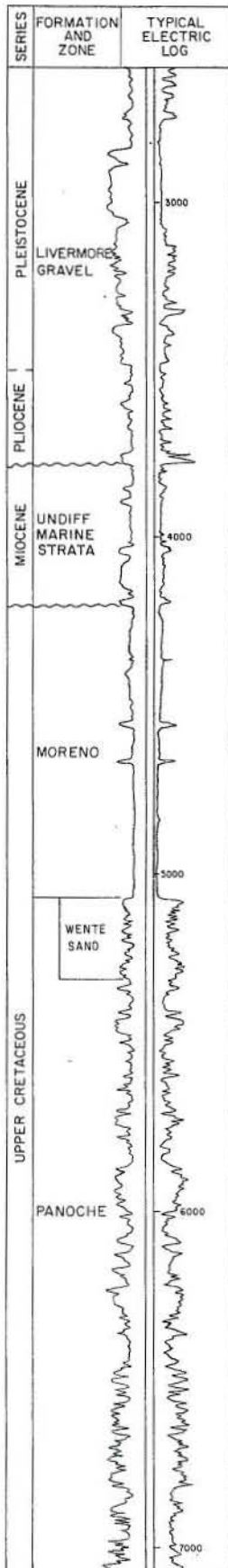
Base of fresh water (ft.): 150

Remarks: Commercial gas deliveries began in January 1947. The field was abandoned in November 1949. Two wells were completed and cumulative gas production was 300,788 Mcf.

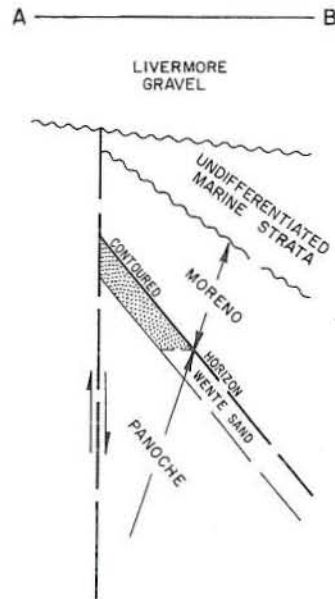
<sup>a/</sup> Directional well, true vertical depth is 10,512 feet.

Selected References:

# HOSPITAL NOSE GAS FIELD (Abandoned)



CONTOURS ON TOP OF WENTÉ SAND



COUNTY: ALAMEDA

HOSPITAL NOSE GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Texas Inc. "Hancock-Signal (NCT-1) Rente" 1	The Texas Co. "Hancock-Signal (NCT-1) Rente" 1	27 38 21	M1	7,062	Rente	Panoche Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

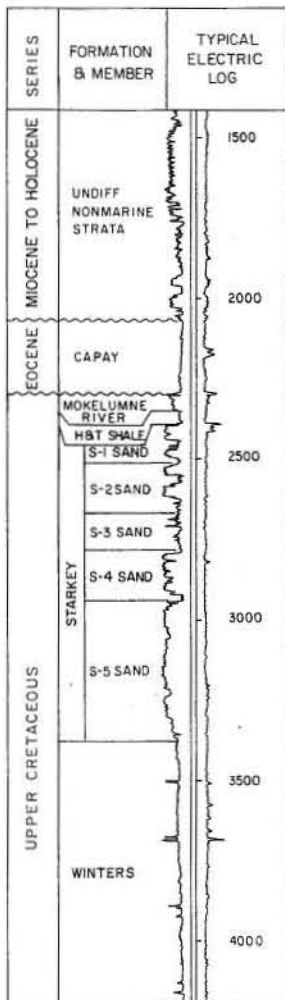
ITEM	WENTH					FIELD OR AREA DATA
Discovery date .....	April 1952					
Initial production rates						
Oil (bbl/day) .....	150					
Gas (Mcf/day) .....	500					
Flow pressure (psi) .....	1/8					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,610					
Reservoir temperature (°F) .....	136					
Initial oil content (STB/ac.-ft.) .....	510					
Initial gas content (MSCF/ac.-ft.) .....	Panoche					
Formation .....	Late Cretaceous					
Geologic age .....	5,070					
Average depth (ft.) .....	110					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	40					
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	20**					
Soj (%) .....	50**					
Swi (%) .....	50**					
Sgi (%) .....						
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.70††					
Heating value (Btu/cu. ft.) .....	1,285					
Water:						
Salinity, NaCl (ppm) .....	561					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	9,424					
Year .....	1954					

Base of fresh water (ft.): 1,500

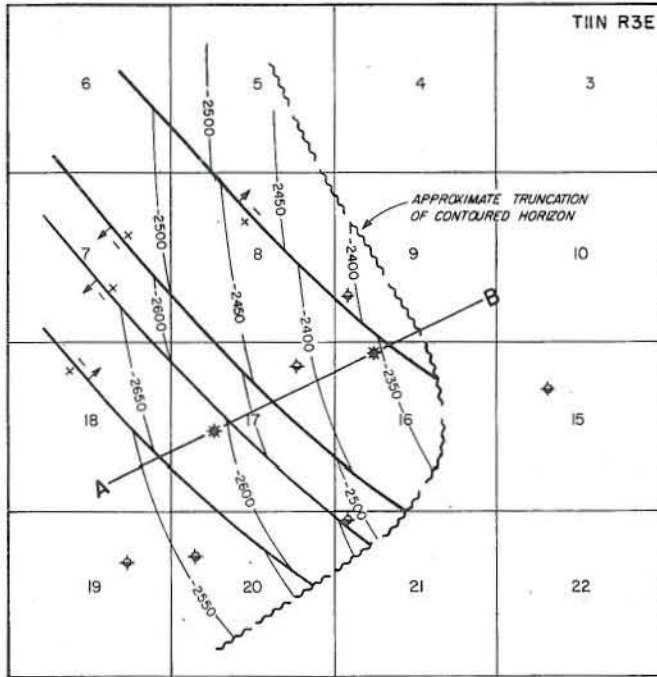
Remarks: Commercial gas deliveries began in November 1952. The field was abandoned in June 1956. Only one well was completed and cumulative gas production was 14,183 Mcf.

Selected References:

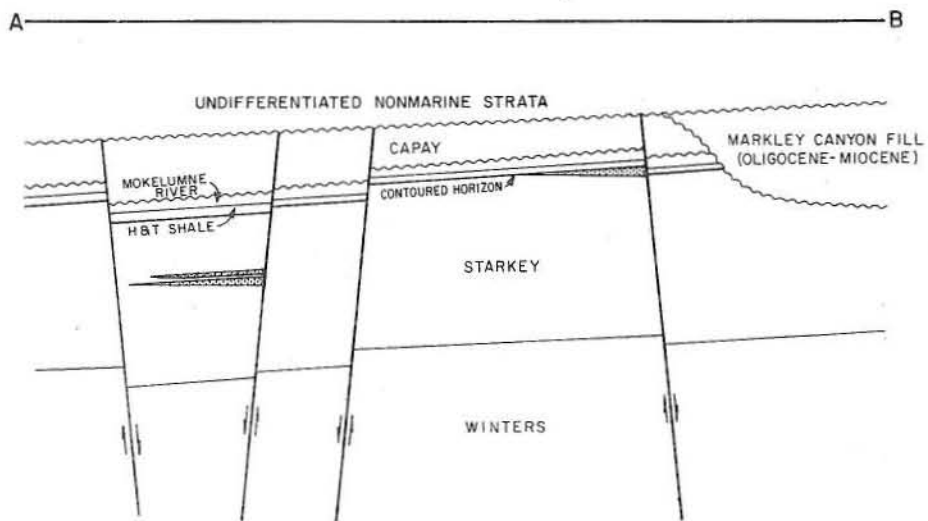
# KARNAK GAS FIELD



JANUARY 1980



CONTOURS ON TOP OF STARKEY



COUNTY: SUTTER

KARNAK GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	The Dow Chemical Co. "Anderson Farms" 1	Same as present	16 11N 3E	MD	4,232 <sup>a/</sup>	Starkey	
Deepest well	The Dow Chemical Co. "Richter, et al Unit Well" 1	Same as present	17 11N 3E	MD	4,567		Winters Late Cretaceous

POOL DATA

ITEM	STARKEY				FIELD OR AREA DATA
Discovery date .....	August 1976				
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	1,400-2,670				
Flow pressure (psi) .....	940-1,210				
Bean size (in.) .....	16/64-20/64				
Initial reservoir pressure (psi) .....	1,060-1,350				
Reservoir temperature (°F) .....	99-106				
Initial oil content (STB/ac-ft.) .....	640-680				
Initial gas content (MSCF/ac-ft.) .....					
Formation .....	Starkey				
Geologic age .....	Late Cretaceous				
Average depth (ft.) .....	2,400-3,000				
Average net thickness (ft.) .....	15-30				
Maximum productive area (acres) .....	100				
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	29-33†				
Soi (%) .....					
Swi (%) .....	40-45†				
Sgi (%) .....	55-60†				
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.569-.625				
Heating value (Btu/cu. ft.) .....	842-980				
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl) .....					
Year .....					
Peak gas production, net (Mcf) .....					
Year .....					

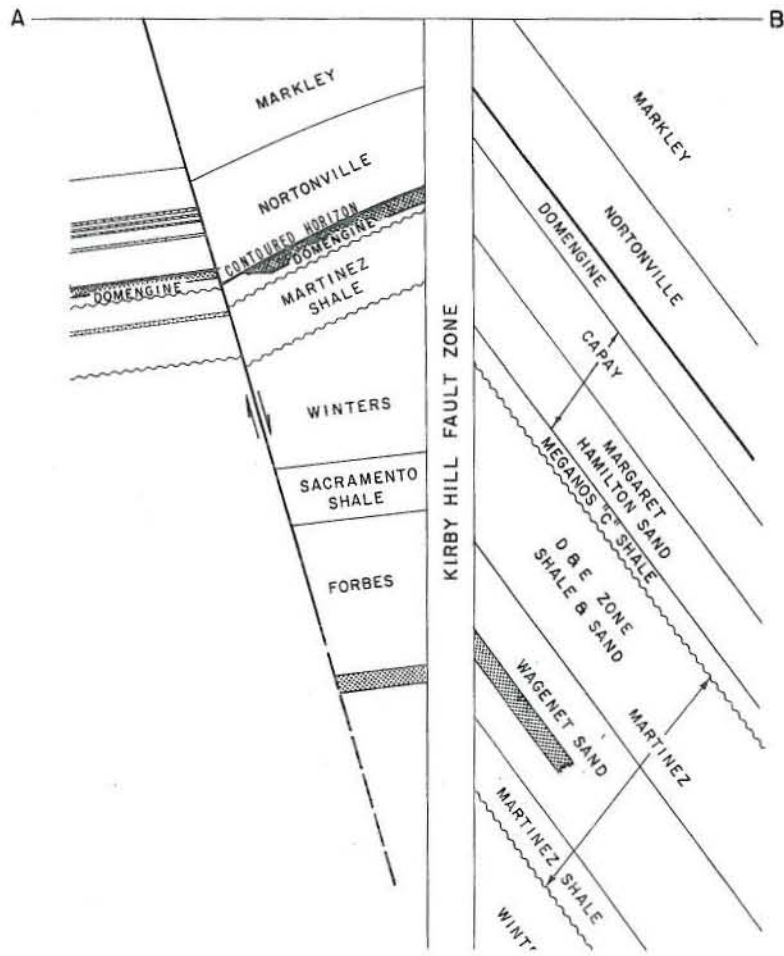
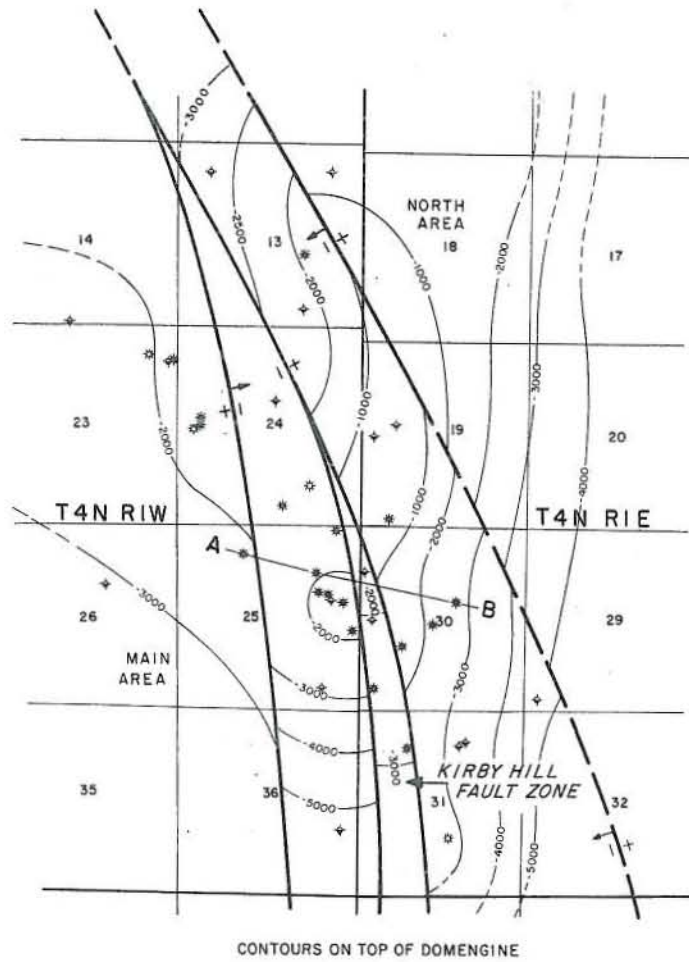
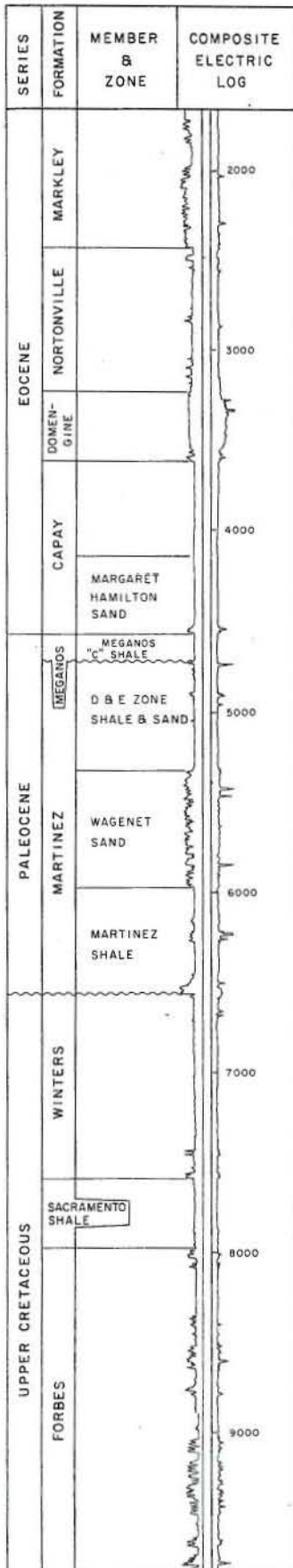
Base of fresh water (ft.): 1,000

Remarks: Commercial gas deliveries have not yet begun.

<sup>a/</sup> Directional well, true vertical depth is 4,469 feet.

Selected References:

# KIRBY HILL GAS FIELD





COUNTY: SOLANO

KIRBY HILL GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	The Dow Chemical "Lambie" 1-A	Shell Oil Co. "Lambie" 1-A	24 4N 1W	MD	2,617	Domengine	
Deepest well	The Dow Chemical Co. "Lambie" 6	Shell Oil Co. "Lambie" 6	30 4N 1E	MD	7,897		undiff. marine Late Cretaceous

POOL DATA

ITEM	MARKLEY	NORTONVILLE	DOMENGINE	WAGENET	(UNNAMED)	FIELD OR AREA DATA
Discovery date .....	July 1972	August 1947	January 1945	March 1945	February 1948	
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	238	1,090	3,980	14,400	4,720	
Flow pressure (psi) .....	95	693	650	1,641	807	
Bean size (in.) .....	5/16	1/4	1/2	5/8	1/2	
Initial reservoir pressure (psi) .....	250	1,160	1,195	2,205	3,915	
Reservoir temperature (°F) .....	89	93-105	97-112	110-140	150	
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	80-110	580-600	450-470	870-1,200	Forbes	
Formation .....	Markley	Nortonville	Domengine	Martinez	Late Cretaceous	
Geologic age .....	Eocene	Eocene	Eocene	Paleocene		
Average depth (ft.) .....	1,100	1,250-2,250	1,550-2,850	2,850-5,400	5,425	
Average net thickness (ft.) .....	30	35	130	150	40	
Maximum productive area (acres) .....						1,060

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	18-24***	25	19	20-24***		
So <sub>g</sub> (%) .....	40-45***	35	36	30-35***		
Sw <sub>i</sub> (%) .....	60-65***	65	64	65-70***		
Sg <sub>i</sub> (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.595 <sup>††</sup>	.590 <sup>††</sup>	.600 <sup>††</sup>	.595 <sup>††</sup>	.585 <sup>††</sup>	
Heating value (Btu/cu. ft.) .....	990	985	995	990	980	
Water:						
Salinity, NaCl (ppm) .....	8,217	1,968-14,124	942-16,778	7,704-14,723	4,280-6,848	
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

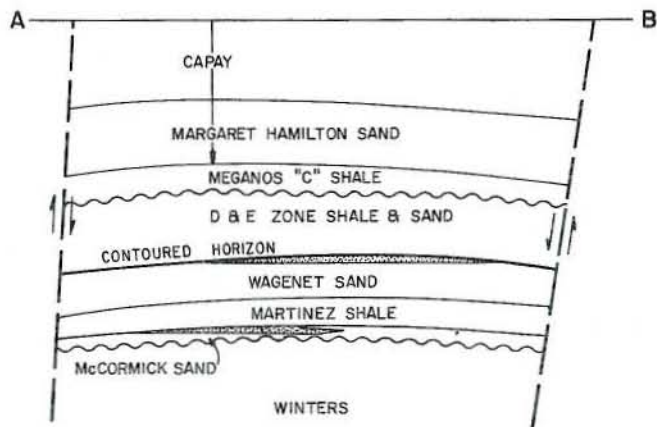
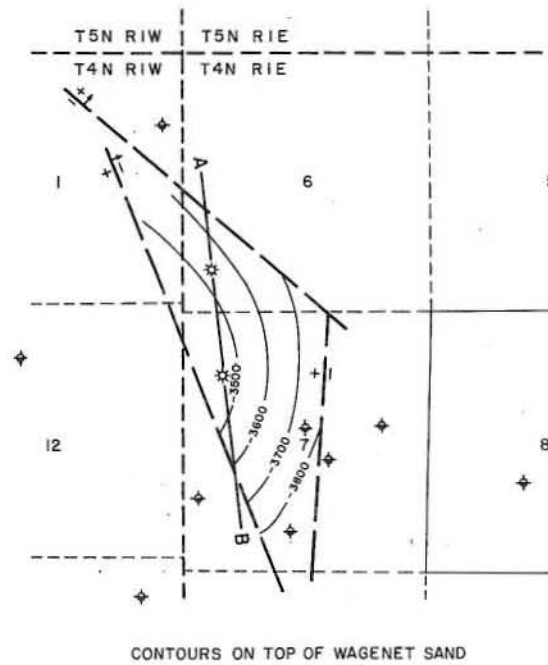
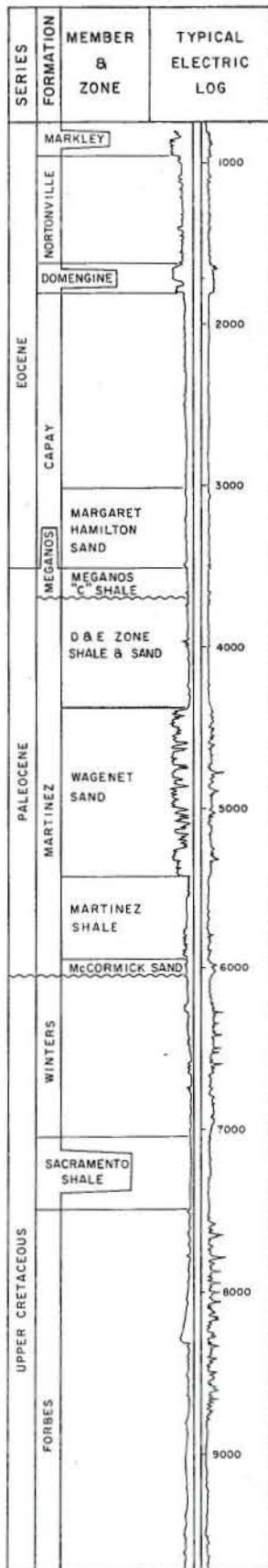
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	3,715,880					
Year .....	1949					

Base of fresh water (ft.): 250-1,800

Remarks: Abnormally high pressures encountered at depth. Commercial deliveries began in November 1946. Part of the field is being used for gas storage purposes by the Dow Chemical Company. The working gas storage capacity is 12,000,000 Mcf with an approximate maximum withdrawal rate of 5,000 Mcf/day.

Selected References: Frame, R. G., 1949, Preliminary Report on Kirby Hill Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 35, No. 1.

# NORTH KIRBY HILL GAS FIELD (Abandoned)



COUNTY: SOLANO

KIRBY HILL, NORTH, GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Longden Petroleum Co. "Unit B" 1	Shell Oil Co. "Unit B" 1	7 4N 1E	MD	4,309	Wagenet	
Deepest well	Shell Oil Co. "Stewart" 1	Same as present	7 4N 1E	MD	9,667		F-zone Late Cretaceous

POOL DATA

ITEM					FIELD OR AREA DATA
	WAGENET	McCORMICK			
Discovery date .....	July 1953	February 1954			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	5,000	4,640			
Flow pressure (psi) .....	385	1,420			
Bean size (in.) .....	3/4	3/8			
Initial reservoir pressure (psi) .....	1,695	1,650			
Reservoir temperature (°F) .....	124	133			
Initial oil content (STB/ac.-ft.) .....	670-860	490-700			
Initial gas content (MSCF/ac.-ft.) .....	Martinez	Martinez			
Formation .....	Paleocene	Paleocene			
Geologic age .....	3,510	4,260			
Average depth (ft.) .....	40	20			
Average net thickness (ft.) .....					
Maximum productive area (acres) .....					100

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	20-24***	18-22***			
Soj (%) .....					
Swj (%) .....	30-35***	35-45***			
Sgj (%) .....	65-70***	55-65***			
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (*API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ *F .....					
Gas:					
Specific gravity (air = 1.0) .....	.573††	.590††			
Heating value (Btu/cu. ft.) .....	980	1,025			
Water:					
Salinity, NaCl (ppm) .....	5,500	16,600-24,000			
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

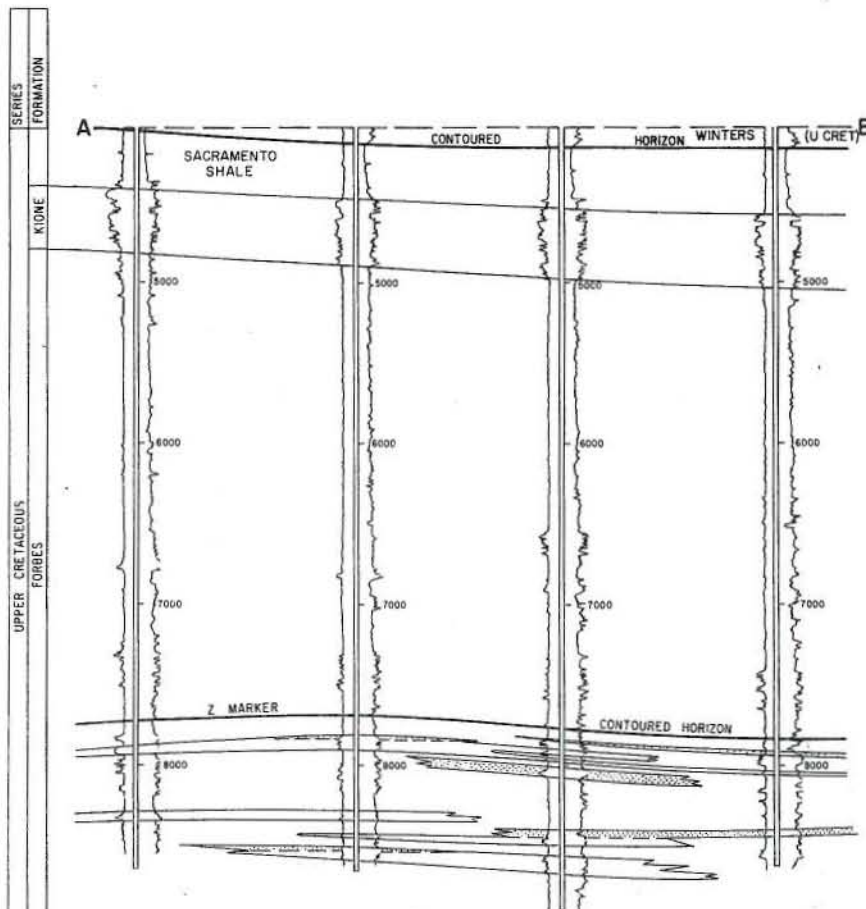
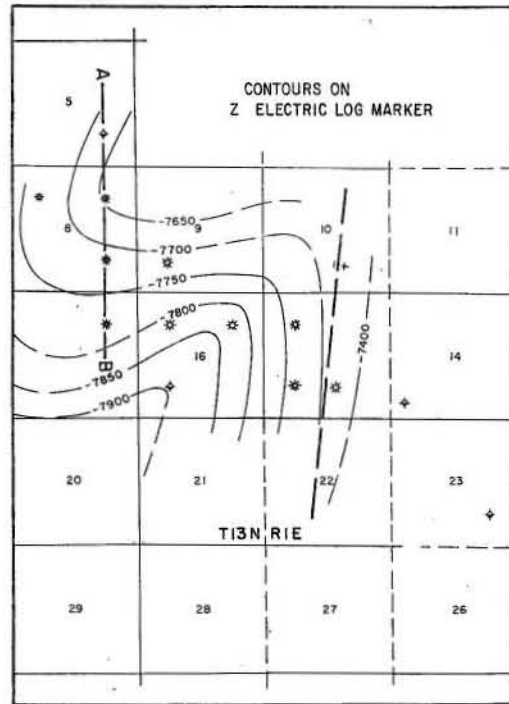
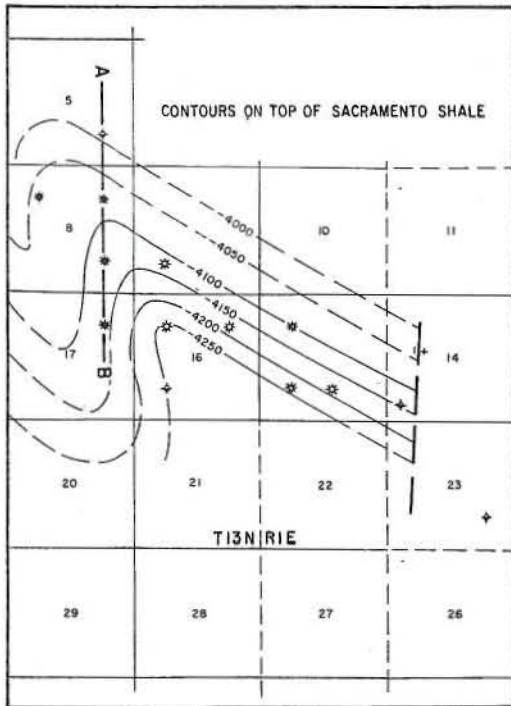
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					184,294
Year .....					1956

Base of fresh water (ft.): None

Remarks: Commercial gas deliveries began in March 1956. The field was abandoned in March 1957. Two wells were completed and cumulative gas production was 187,461 Mcf.

Selected References:

# KIRK GAS FIELD



COUNTY: COLUSA and SUTTER

KIRK GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Gulf Oil Corp. "Goff-Erdman Unit A" 1	Western Gulf Oil Co. "Gulf-Erdman Unit A" 1	15 13N 1E	MD	9,522	Forbes	Guinda
Deepest well	Same as above	"	"	"	"	"	Late Cretaceous

POOL DATA

ITEM	FORBES					FIELD OR AREA DATA
Discovery date .....	October 1960					
Initial production rates						
Oil (bbl/day) .....	3,037					
Gas (Mcf/day) .....	1,150					
Flow pressure (psi) .....	18/64					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	3,750-5,750					
Reservoir temperature (°F) .....	139-154					
Initial oil content (STB/ac.-ft.) .....	1,400-1,600					
Initial gas content (MSCF/ac.-ft.) .....	Forbes					
Formation .....	Late Cretaceous					
Geologic age .....	7,330-8,710					
Average depth (ft.) .....	15-95					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	1,560					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	24-29					
Soj (%) .....	48-55					
Swj (%) .....	45-52					
Sgi (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ *F .....						
Gas:						
Specific gravity (air = 1.0) .....	.650-.570††					
Heating value (Btu/cu. ft.) .....	783-1,015					
Water:						
Salinity, NaCl (ppm) .....	11,200-18,000					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects.....						
Date started .....						
Date discontinued .....						

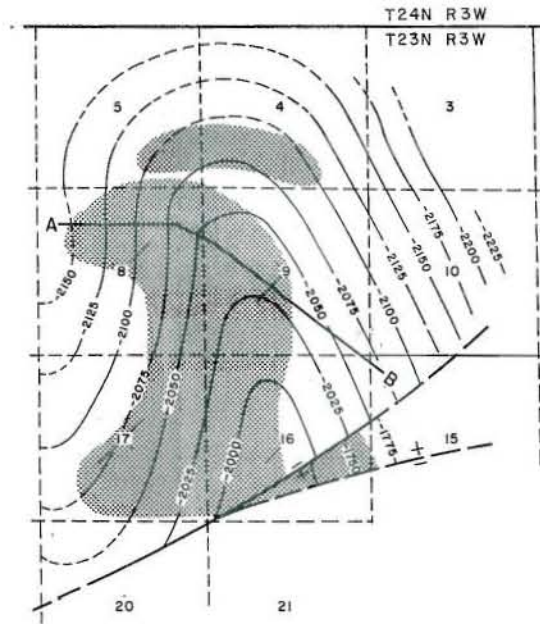
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	1,018,815					
Year .....	1963					

Base of fresh water (ft.): 1,950

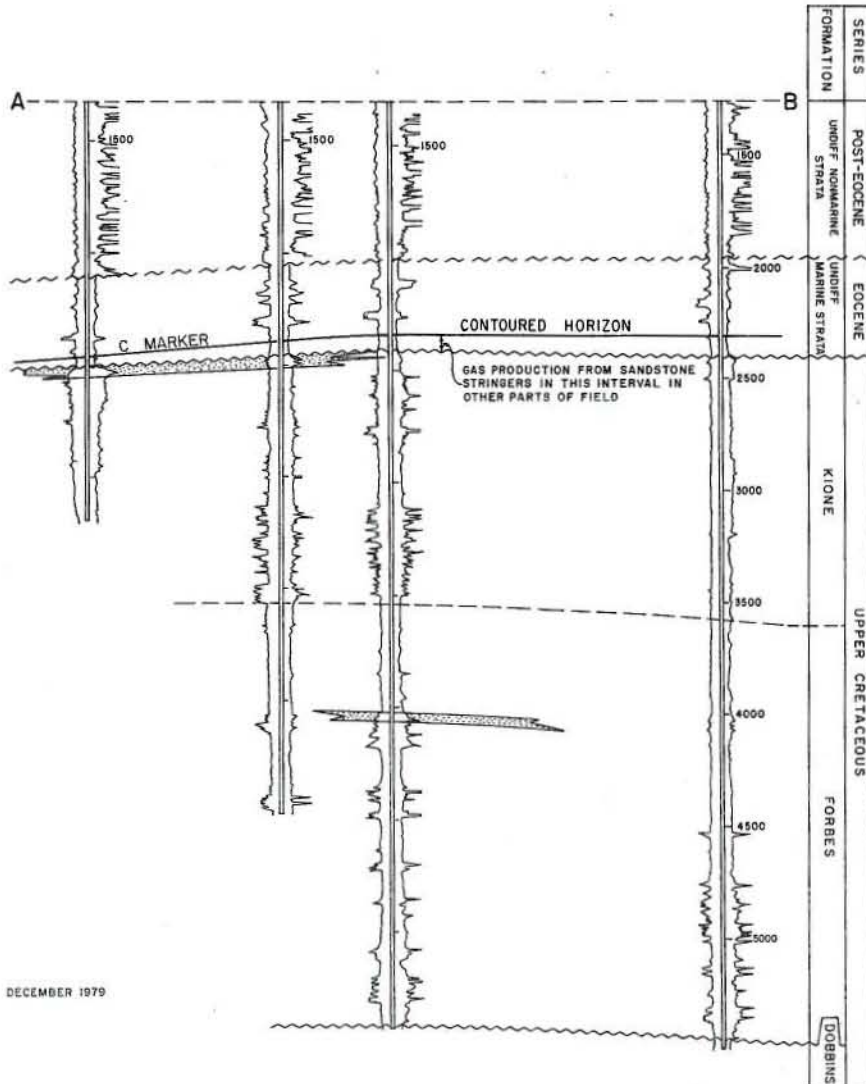
Remarks: Commercial gas deliveries began in December 1961.

Selected References: Hunter, W. J., 1962, Kirk Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 48, No. 1.

# KIRKWOOD GAS FIELD



CONTOURS ON C ELECTRIC LOG MARKER



COUNTY: TEHAMA

KIRKWOOD GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	James W. Morgan "James W. Morgan et al" 1	Humble Oil & Refining Co. "James W. Morgan et al" 1	9 23N 3W	MD	5,435	Forbes	
Deepest well	Sun Oil Co. "Tucker-Gay" 1	Sunray Oil Co. "Tucker-Gay" 1	10 23N 3W	MD	5,900		Dobbins Late Cretaceous

POOL DATA

ITEM	FIELD OR AREA DATA		
	UNDIFFERENTIATED MARINE STRATA	KIONE	FORBES
Discovery date .....	July 1960	May 1960	December 1958
Initial production rates			
Oil (bbl/day) .....			
Gas (Mcf/day) .....	4,550	3,280	1,120
Flow pressure (psi) .....	750	640	750
Bean size (in.) .....	1/2	25/64	1/2
Initial reservoir pressure (psi) .....	1,080	1,020	1,970
Reservoir temperature (°F) .....	94	95	105
Initial oil content (STB/ac.-ft.) .....			
Initial gas content (MSCF/ac.-ft.) .....	410-670	480-580	580-970
Formation .....	undiff. marine strata	Kione	Forbes
Geologic age .....	Eocene	late Cretaceous	Late Cretaceous
Average depth (ft.) .....	2,400	2,430	4,020
Average net thickness (ft.) .....	25	40	30
Maximum productive area (acres) .....			
			1,770

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	20-30***	25-28***	18-25
So <sub>2</sub> (%) .....	35-40**	35-40***	40-50
Sw <sub>1</sub> (%) .....	60-65**	60-65***	50-60
Sg <sub>1</sub> (%) .....			
Permeability to air (md) .....			

RESERVOIR FLUID PROPERTIES

Oil:			
Oil gravity (*API) .....			
Sulfur content (% by wt.) .....			
Initial solution GOR (SCF/STB) .....			
Initial oil FVF (RB/STB) .....			
Bubble point press. (psia) .....			
Viscosity (cp) @ °F .....			
Gas:			
Specific gravity (air = 1.0) .....	.560	.557††	.557††
Heating value (Btu/cu. ft.) .....	1,005	1,010	1,010
Water:			
Salinity, NaCl (ppm) .....	2,100	2,200	
T.D.S. (ppm) .....			
R <sub>w</sub> (ohm/m) (77°F) .....			

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

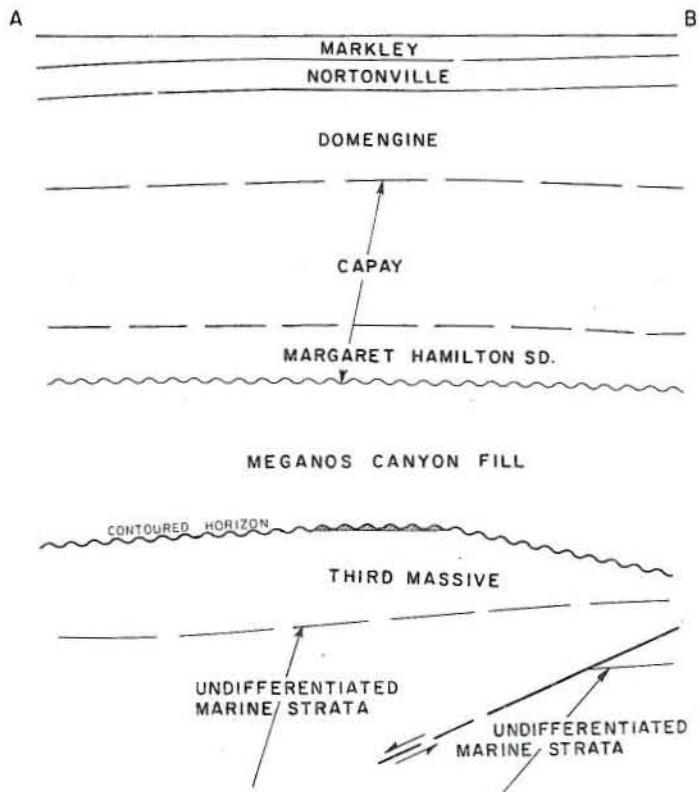
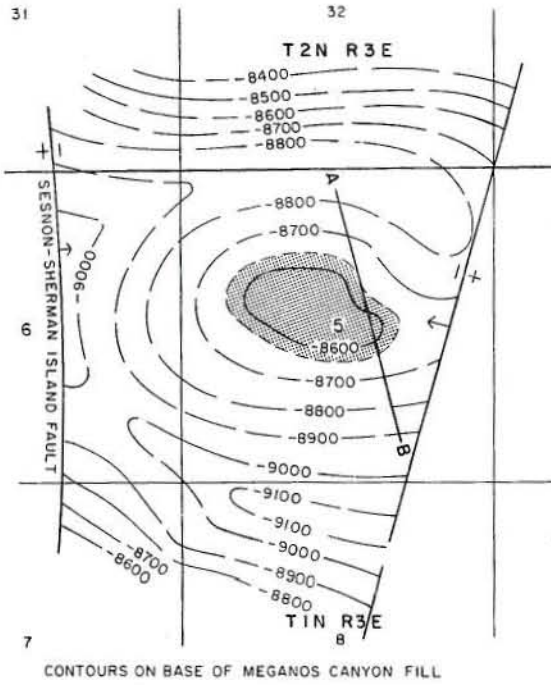
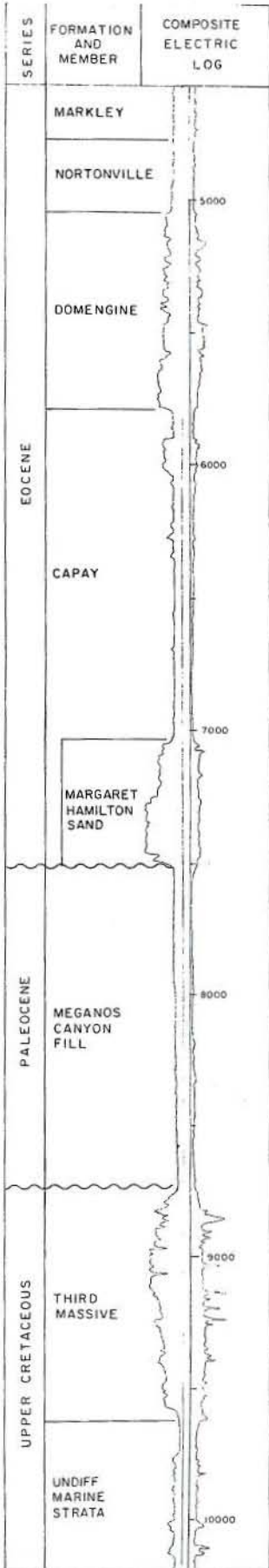
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					1,496,884
Year .....					1962

Base of fresh water (ft.): 2,000

Remarks: Commercial gas deliveries began in May 1961. Some of the Eocene sand stringers have been given local names by the operators.

Selected References: Beecroft, G. W., 1964, Kirkwood Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 50, No. 1.

# KNIGHTSEN GAS FIELD





COUNTY: CONTRA COSTA

**KNIGHTSEN GAS FIELD**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Natural Gas Corp. of Calif. "Western-Murphy-et al" 1	Same as present	5 1N 3E	MD	10,673	Third Massive	Tracy
Deepest well	Same as above	"	"	"	"	"	Late Cretaceous

**POOL DATA**

ITEM	THIRD MASSIVE					FIELD OR AREA DATA
Discovery date .....	March 1980					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,098					
Flow pressure (psi) .....	2,250					
Bean size (in.) .....	10/64					
Initial reservoir pressure (psi) .....	3,350					
Reservoir temperature (°F) .....	178					
Initial oil content (STB/ac.-ft.) .....	1,100-1,600					
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Mokelumne River					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	8,700					
Average net thickness (ft.) .....	25					
Maximum productive area (acres) .....	160					

**RESERVOIR ROCK PROPERTIES**

Porosity (%) .....	18-25†					
Soj (%) .....						
Swi (%) .....	30-35†					
Sgi (%) .....	65-70†					
Permeability to air (md) .....						

**RESERVOIR FLUID PROPERTIES**

<b>Oil:</b>						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
<b>Gas:</b>						
Specific gravity (air = 1.0) .....	.611					
Heating value (Btu/cu. ft.) .....	1,083					
<b>Water:</b>						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

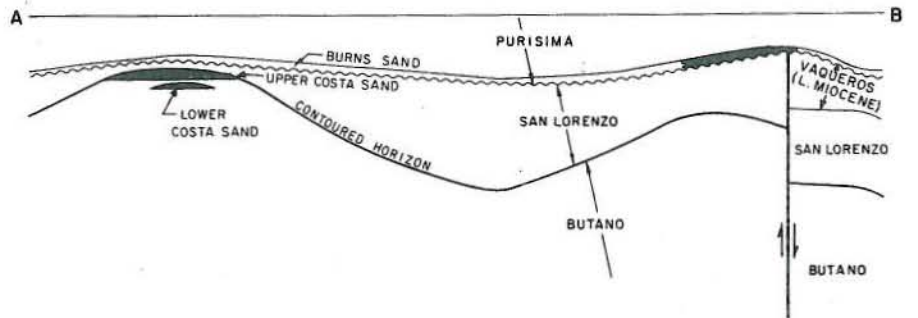
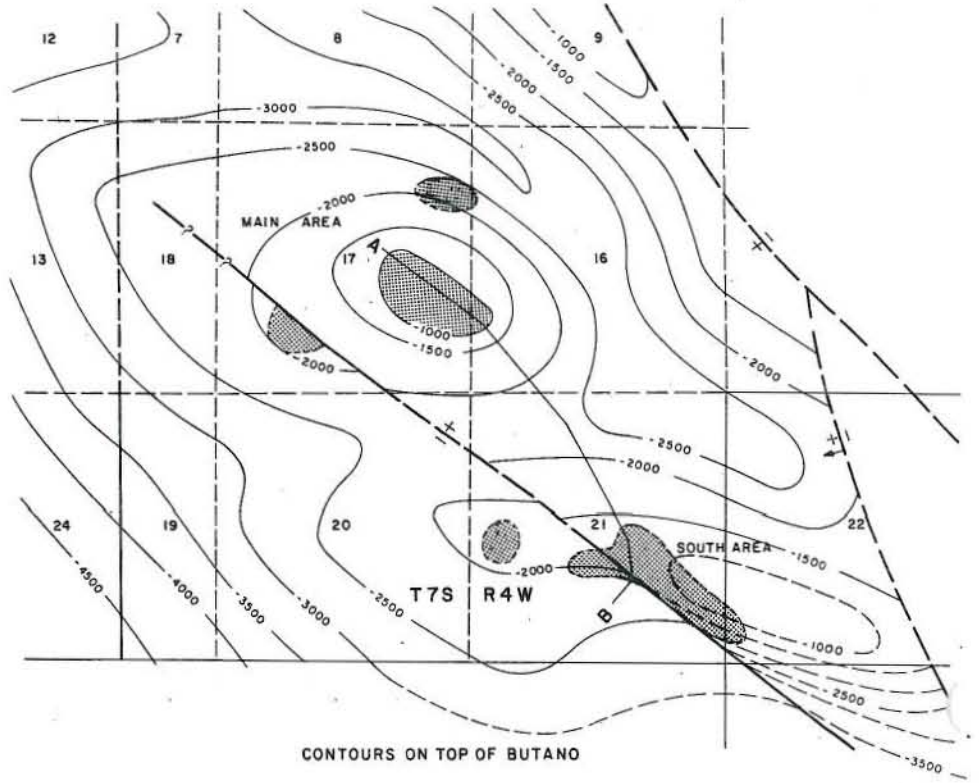
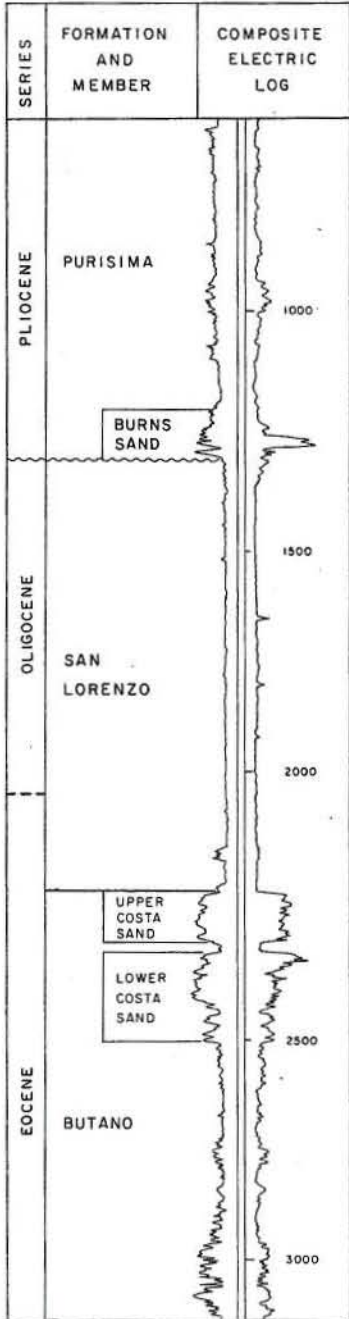
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 100-300

Remarks: Commercial gas deliveries have not yet begun.

Selected References:

# LA HONDA OIL FIELD



COUNTY: SAN MATEO

LA HONDA OIL FIELD  
MAIN AREA

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Zia La Honda, Ltd. "Carter-Lane" 2	Neaves Petroleum Developments "Neaves-Union Oil-Lane" 3	17 7S 4W	MD	1,795	Costa	
Deepest well	Neaves Petroleum Developments "Neaves-Union Oil Co. Lane" 1	Same as present	16 7S 4W	MD	4,271		Butano Eocene

POOL DATA

ITEM	POOL DATA		FIELD OR AREA DATA
	BURNS	COSTA	
Discovery date .....	May 1958	December 1956	
Initial production rates			
Oil (bbl/day) .....	17	100	
Gas (Mcf/day) .....	-	15	
Flow pressure (psi) .....	-	195	
Bean size (in.) .....			
Initial reservoir pressure (psi) .....		87	
Reservoir temperature (°F) .....	-	1,300-1,700	
Initial oil content (STB/ac.-ft.) .....			
Initial gas content (MSCF/ac.-ft.) .....			
Formation .....	Purisima	Butano	
Geologic age .....	Pliocene	Eocene	
Average depth (ft.) .....	1,120	1,800	
Average net thickness (ft.) .....	30	60	
Maximum productive area (acres) .....			70

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	-	30-35	
So <sub>g</sub> (%) .....	-	60-70	
Sw <sub>g</sub> (%) .....	-	30-40	
Sg <sub>g</sub> (%) .....			
Permeability to air (md) .....			

RESERVOIR FLUID PROPERTIES

<b>Oil:</b>			
Oil gravity (*API) .....	24	32-40	
Sulfur content (% by wt.) .....			
Initial solution GOR (SCF/STB) .....	-	200	
Initial oil FVF (RB/STB) .....	-	1.1	
Bubble point press. (psia) .....			
Viscosity (cp) @ °F .....			
<b>Gas:</b>			
Specific gravity (air = 1.0) .....			
Heating value (Btu/cu. ft.) .....			
<b>Water:</b>			
Salinity, NaCl (ppm) .....	-	19,700	
T.D.S. (ppm) .....			
R <sub>w</sub> (ohm/m) (77°F) .....			

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....			
Date started .....			
Date discontinued .....			

Peak oil production (bbl)				178,184
Year .....				1957
Peak gas production, net (Mcf)				
Year .....				

Base of fresh water (ft.): 150

Remarks:

Selected References: Pothergill, H.L., 1962, La Honda Oil Field, Calif. in Geologic Guide to the Gas and Oil Fields of Northern Calif.: Div. of Mines and Geology Bull. 181, p. 221-222.

COUNTY: SAN MATEO

LA HONDA OIL FIELD  
SOUTH AREA

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Zia La Honda, Ltd. "Burns" 1	Neaves Petroleum Developments "Neaves-Union-Burns" 1	21 7S 4W	MD	1,451	Burns	
Deepest well	Zia La Honda, Ltd. "Burns-Texaco" 1	Neaves Petroleum Developments "Neaves-Union Burns" 14	22 7S 4W	MD	4,015		Butano Eocene

POOL DATA

ITEM	BURNS		COSTA		FIELD OR AREA DATA
Discovery date .....	July 1959	January 1961			
Initial production rates					
Oil (bbl/day) .....	25	30			
Gas (Mcf/day) .....					
Flow pressure (psi) .....	Insufficient to flow				
Bean size (in.) .....					
Initial reservoir pressure (psi) .....	93	110			
Reservoir temperature (°F) .....	900-1,400	1,300-1,700			
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....					
Formation .....	Purisima	Butano			
Geologic age .....	Miocene	Eocene			
Average depth (ft.) .....	1,400	2,500			
Average net thickness (ft.) .....	75	30			
Maximum productive area (acres) .....					65

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	22-30	30-35			
So <sub>g</sub> (%) .....	60-65	60-70			
Sw <sub>i</sub> (%) .....	35-40	30-40			
Sg <sub>g</sub> (%) .....					
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....	16	31			
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....	150	150 ±			
Initial oil FVF (RB/STB) .....	1.1	1.1			
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....					
Heating value (Btu/cu. ft.) .....					
Water:					
Salinity, NaCl (ppm) .....	41,000				
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

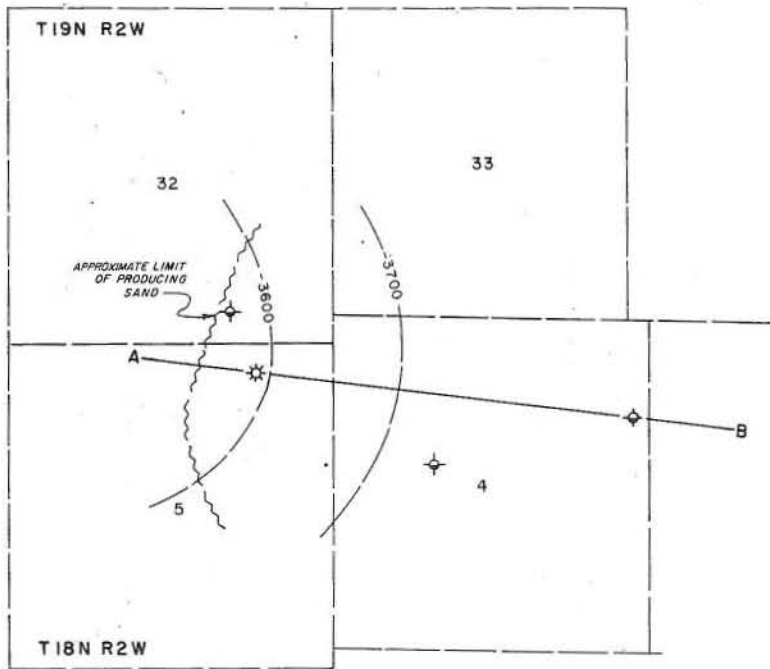
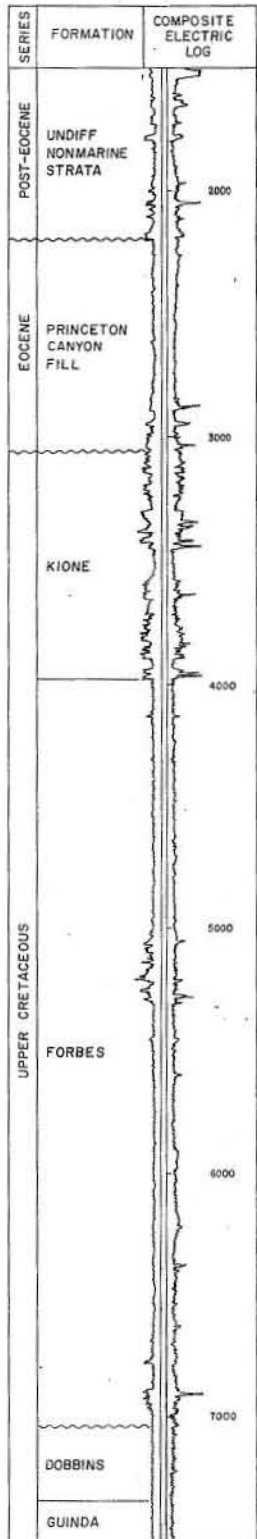
Peak oil production (bbl)					95,717
Year .....					1960
Peak gas production, net (Mcf)					
Year .....					

Base of fresh water (ft.): 150

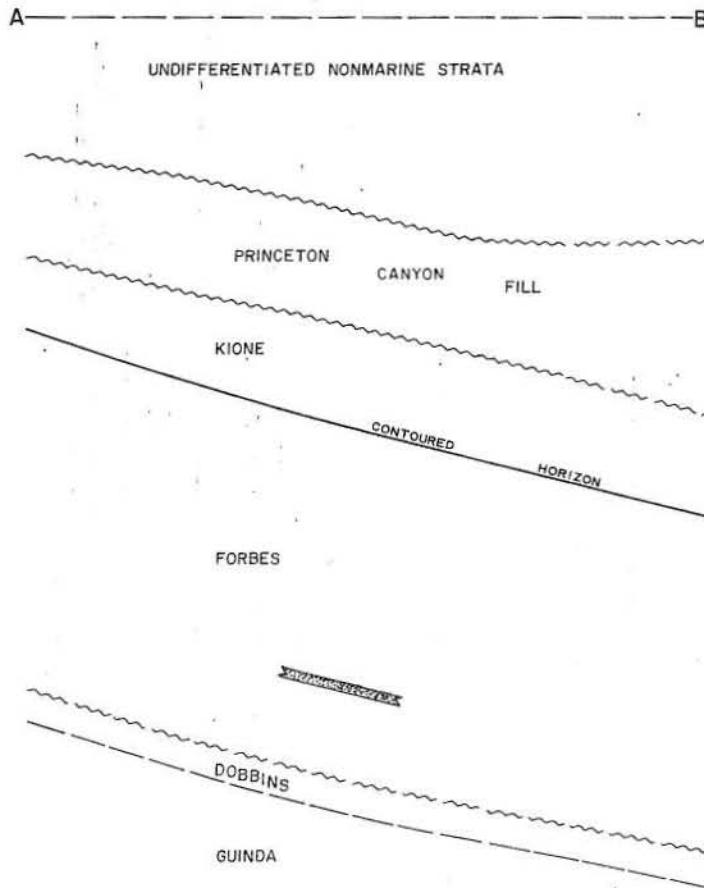
Remarks:

Selected References:

**WEST LARKIN GAS FIELD**  
(Abandoned)



CONTOURS ON TOP OF FORBES



COUNTY: GLENN

LARKIN, WEST, GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Gulf Oil Corp. "Capital Company" 1	Gene Reid Drilling, Inc. "Capital" 1	5 18N 2W	MD	5,993	unnamed	
Deepest well	Chevron U.S.A. Inc. "Transamerica Development Co." 1	Houston Oil & Minerals Corp. "Transamerica Development Co." 1	32 19N 2W	MD	7,876		Guinda Late Cretaceous

POOL DATA

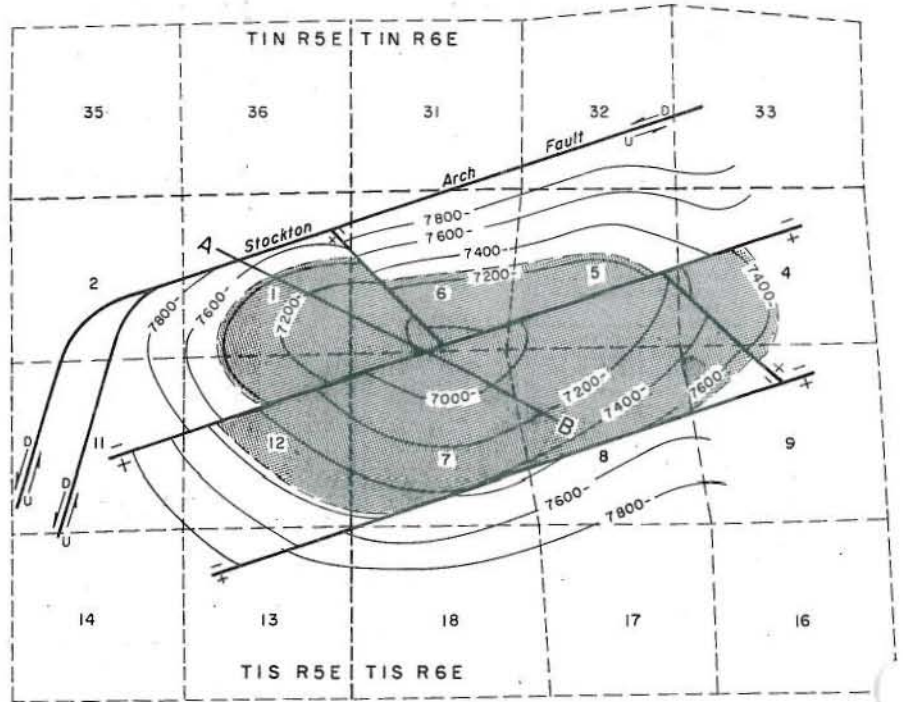
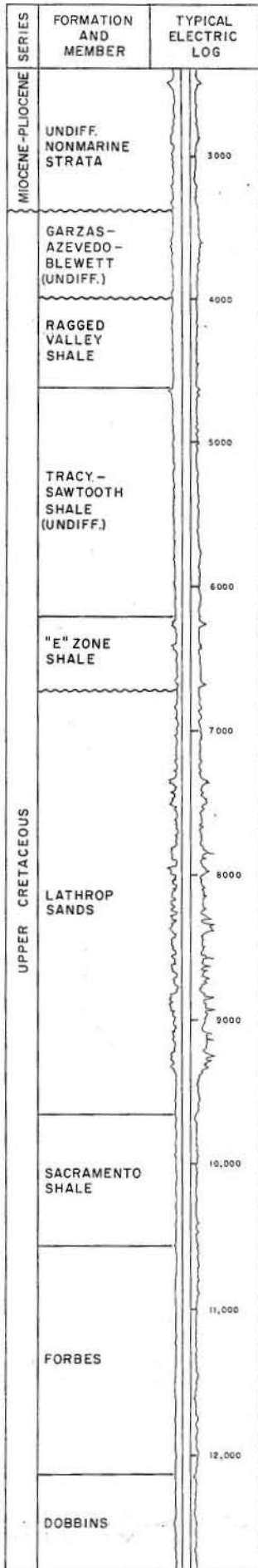
ITEM	UNNAMED					FIELD OR AREA DATA
Discovery date .....	December 1955					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,000					
Flow pressure (psi) .....	650					
Bean size (in.) .....	16/64					
Initial reservoir pressure (psi) .....	3,040					
Reservoir temperature (°F) .....	118					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	720-1,050					
Formation .....	Forbes					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	5,933					
Average net thickness (ft.) .....	18					
Maximum productive area (acres) .....	40					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	15-20***					
Soq (%) .....						
Swi (%) .....	45-50***					
Sgi (%) .....	50-55***					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.570††					
Heating value (Btu/cu. ft.) .....	980*					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....	3,340					
Year .....	1957					

Base of fresh water (ft.): 1,600

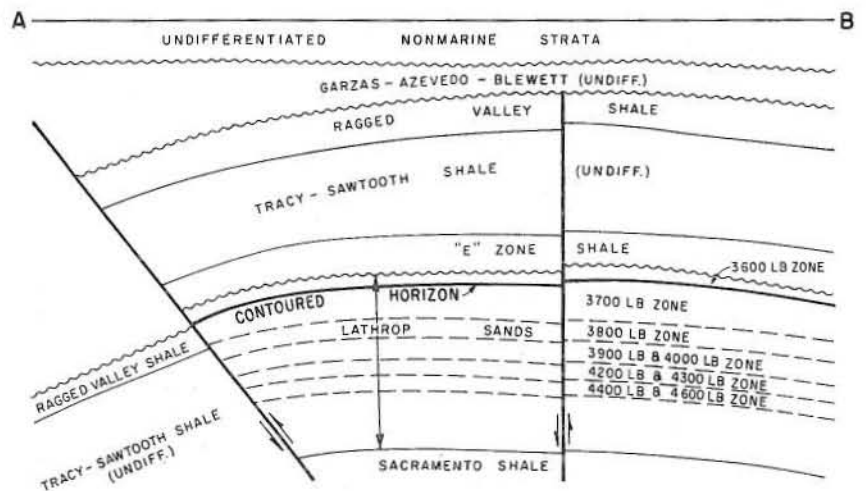
Remarks: Originally named the Willow Creek Gas area. No commercial gas sales were made; all gas produced was used to provide fuel to drill Gulf Oil Corp. "Capital Company" 2, Sec. 8, T. 18 N., R. 2 W. The field was abandoned in May 1958. Only one well was completed and cumulative gas production was 3,340 Mcf.

Selected References:

# LATHROP GAS FIELD



CONTOURS ON TOP OF "3700 LB" ZONE



COUNTY: SAN JOAQUIN

LATHROP GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Occidental Petroleum Corp. "Lathrop Unit A" 1	Same as present	5 1S 6E	MD	7,860	Lathrop	
Deepest well	Occidental Petroleum Corp. "Lathrop Unit B" 5	Same as present	7 1S 6E	MD	12,787		G-zone Late Cretaceous

POOL DATA

ITEM	POOL DATA			FIELD OR AREA DATA
	AZEVEDO	TRACY	LATHROP	
Discovery date .....	December 1971	January 1962	October 1961	
Initial production rates				
Oil (bbl/day) .....	2,225	150-540 <sup>a/</sup>	4,280-21,800	
Gas (Mcf/day) .....	1,465	160-430	1,600-2,510	
Flow pressure (psi) .....	1/4	1/8-3/8	5/16-3/4	
Bean size (in.) .....				
Initial reservoir pressure (psi) .....	1,920	2,240-2,810	3,610-4,240	
Reservoir temperature (°F) .....	113	121-137	143-159	
Initial oil content (STB/ac.-ft.) .....	900	1,200-1,400	1,600	
Initial gas content (MSCF/ac.-ft.) .....	Azevedo	Tracy	Lathrop	
Formation .....	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Geologic age .....	3,950	4,747-6,295	6,906-8,422	
Average depth (ft.) .....	75	50-75	75-550	
Average net thickness (ft.) .....				
Maximum productive area (acres) .....				2,330

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	-	-	23-27	
Soj (%) .....	-	-	35-40	
Swi (%) .....	-	-	60-65	
Sgi (%) .....	-	-	48-79	
Permeability to air (md) .....				

RESERVOIR FLUID PROPERTIES

Oil:				
Oil gravity (*API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ *F .....				
Gas:				
Specific gravity (air = 1.0) .....	.597††	.564††	.578-.636††	.620
Heating value (Btu/cu. ft.) .....	920	1,000	825-960	863
Water:				
Salinity, NaCl (ppm) .....	17,000		10,700-25,900	15,000-27,000
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				

Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				33,199,970
Year .....				1972

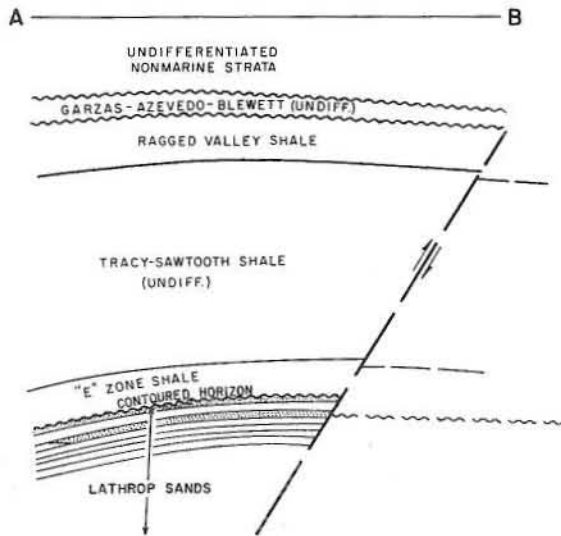
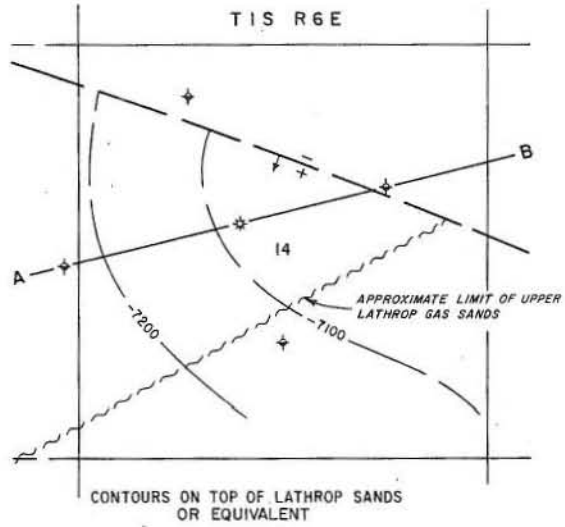
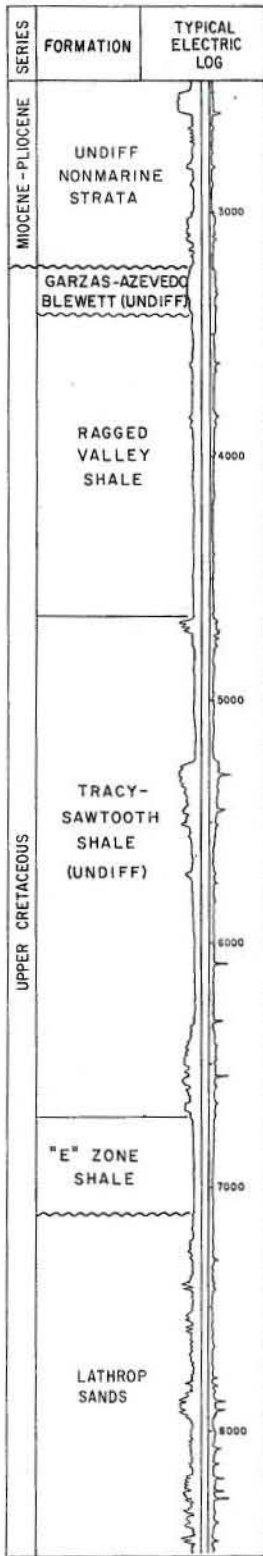
Base of fresh water (ft.): 500

Remarks: Commercial gas deliveries began in January 1963.  
<sup>a/</sup> Results of open-hole tests; zone not open to production.

Selected References: Park, W. H., 1962, Lathrop Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 48, No. 2.  
 Teitsworth, R. A., 1964, Geology and Development of the Lathrop Gas Field, San Joaquin County, Calif., in Selected Papers Presented to San Joaquin Geological Society, Vol. 2, p. 19-29.



# LATHROP SOUTHEAST GAS FIELD (Abandoned)



COUNTY: SAN JOAQUIN

LATHROP, SOUTHEAST, GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	E. B. Towne, Oper. "Lathrop Southeast Unit A" 1	Same as present	14 1S 6E	MD	8,493	Lathrop	
Deepest well	E. B. Towne, Oper. "Lathrop Southeast Unit A" 3	Same as present	14 1S 6E	MD	9,680		Panoche Late Cretaceous

POOL DATA

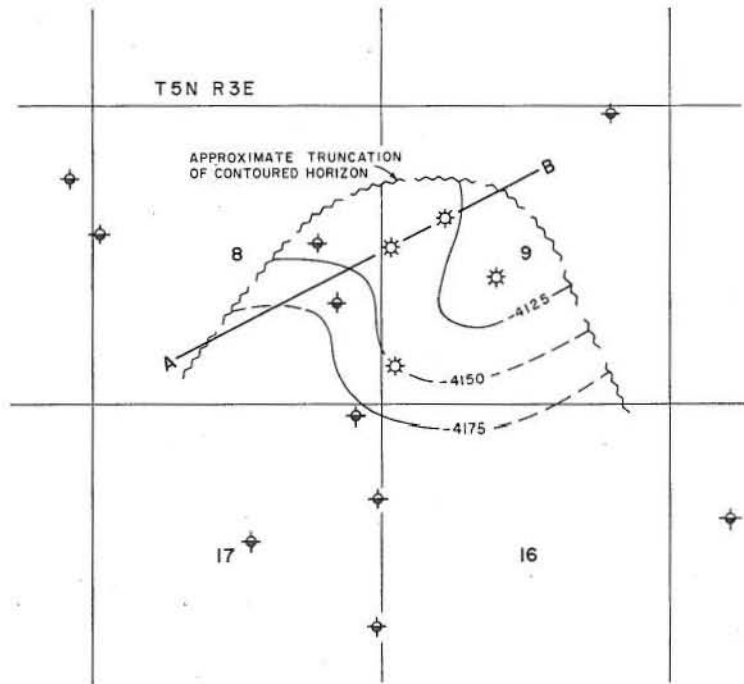
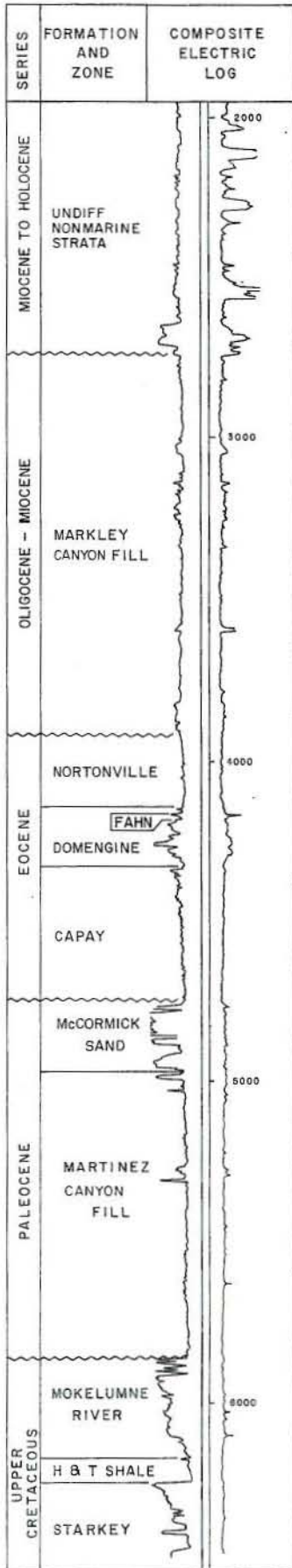
ITEM	LATHROP					FIELD OR AREA DATA
Discovery date .....	November 1967					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	2,350					
Flow pressure (psi) .....	1,490					
Bean size (in.) .....	1/4					
Initial reservoir pressure (psi) .....	3,670					
Reservoir temperature (°F) .....	154					
Initial oil content (STB/ac-ft.) .....	1,400-1,800					
Initial gas content (MSCF/ac-ft.) .....	Panoche					
Formation .....	Late Cretaceous					
Geologic age .....	7,110					
Average depth (ft.) .....	82					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	40					
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	23-27***					
So <sub>g</sub> (%) .....	35-40***					
Sw <sub>g</sub> (%) .....	60-65***					
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.557††					
Heating value (Btu/cu. ft.) .....	1,010					
Water:						
Salinity, NaCl (ppm) .....	26,200					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	66,258					
Year .....	1969					

Base of fresh water (ft.): Above 900

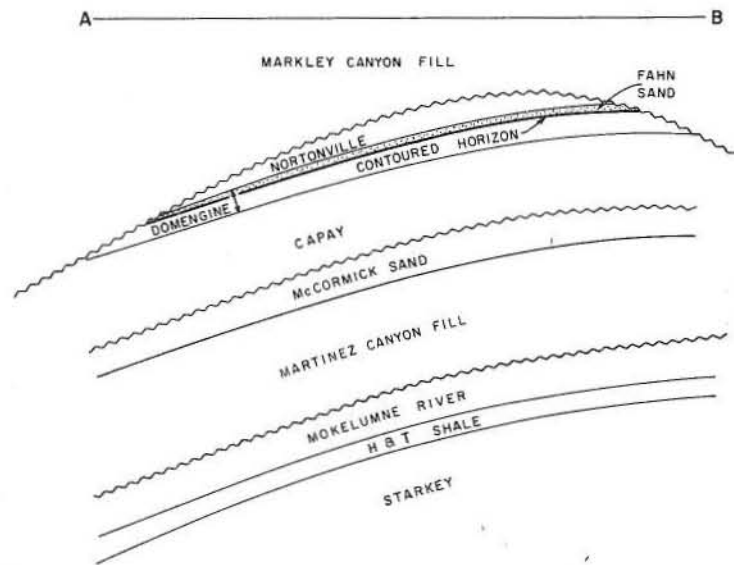
Remarks: Commercial gas deliveries began in July 1969. The field was abandoned in November 1971. Only one well was completed and cumulative gas production was 98,469 Mcf.

Selected References:

# LIBERTY CUT GAS FIELD (Abandoned)



CONTOURS ON BASE OF FAHN SAND



COUNTY: SOLANO

LIBERTY CUT GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Arcady Oil Co. "Fahn" 1	Same as present	9 5N 3E	MD	5,000	Fahn	
Deepest well	Arcady Oil Co. "Fahn" 5	Same as present	8 5N 3E	MD	6,463		Starkey Late Cretaceous

POOL DATA

ITEM	UNNAMED				FAHN		FIELD OR AREA DATA
Discovery date .....	October 1954				November 1953		
Initial production rates							
Oil (bbl/day) .....							
Gas (Mcf/day) .....	1,000 <sup>a/</sup>				2,000		
Flow pressure (psi) .....	1,100				1,500		
Bean size (in.) .....	14/64				12/64		
Initial reservoir pressure (psi) .....	1,770				1,820		
Reservoir temperature (°F) .....	117				118		
Initial oil content (STB/ac.-ft.) .....							
Initial gas content (MSCF/ac.-ft.) .....					950-1,200		
Formation .....	Nortonville				Domengine		
Geologic age .....	Eocene				Eocene		
Average depth (ft.) .....	4,060				4,130		
Average net thickness (ft.) .....	10				15		
Maximum productive area (acres) .....							190
<b>RESERVOIR ROCK PROPERTIES</b>							
Porosity (%) .....	-				25-30***		
So <sub>2</sub> (%) .....	-				30-35***		
Sw <sub>2</sub> (%) .....	-				65-70***		
Sg <sub>2</sub> (%) .....	-						
Permeability to air (md) .....	-						
<b>RESERVOIR FLUID PROPERTIES</b>							
Oil:							
Oil gravity (*API) .....							
Sulfur content (% by wt.) .....							
Initial solution GOR (SCF/STB) .....							
Initial oil FVF (RB/STB) .....							
Bubble point press. (psia) .....							
Viscosity (cp) @ °F .....							
Gas:							
Specific gravity (air = 1.0) .....	.5631†				.5631†		
Heating value (Btu/cu. ft.) .....	996				996		
Water:							
Salinity, NaCl (ppm) .....	9,930				9,930		
T.D.S. (ppm) .....							
R <sub>w</sub> (ohm/m) (77°F) .....							
<b>ENHANCED RECOVERY PROJECTS</b>							
Enhanced recovery projects .....							
Date started .....							
Date discontinued .....							
Peak oil production (bbl) Year .....							
Peak gas production, net (Mcf) Year .....							114,677 1957

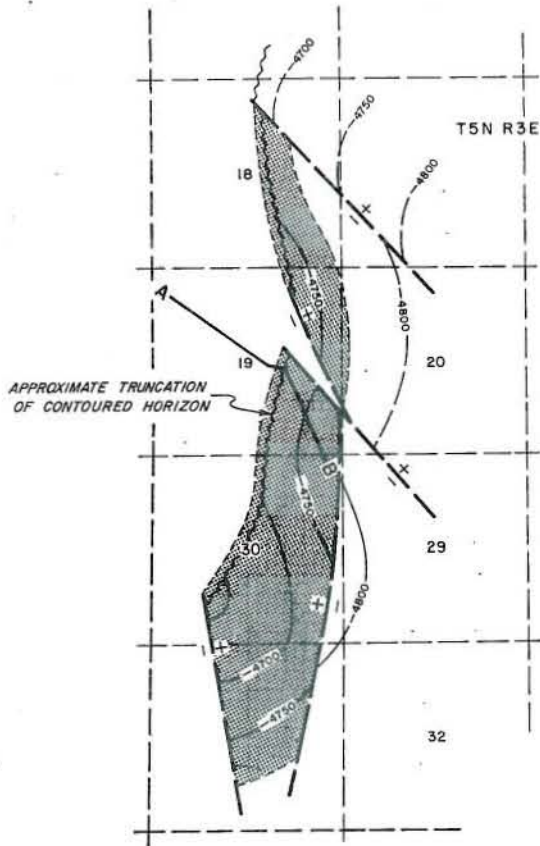
Base of fresh water (ft.): 2,600

Remarks: Gas production was commingled from both the Fahn zone and unnamed sand stringers in the Nortonville Formation. Commercial gas deliveries began in June 1957. The field was abandoned in October 1965. Four wells were completed and cumulative gas production was 179,030 Mcf.

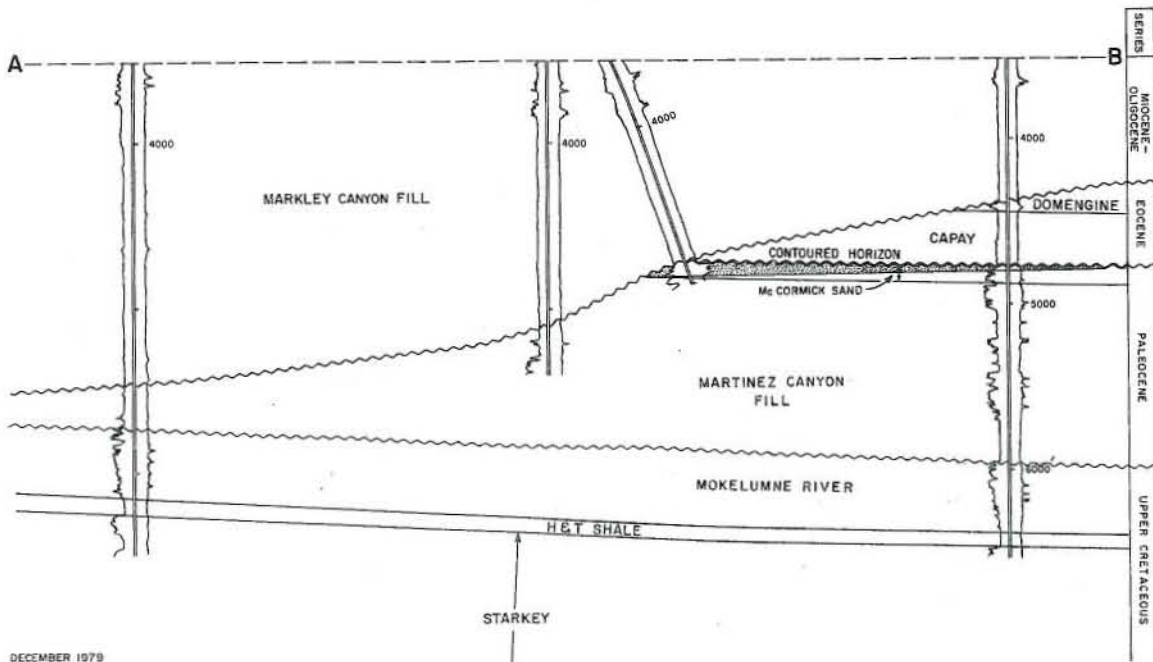
<sup>a/</sup> Gas production was commingled with Fahn zone.

Selected References:

# LIBERTY ISLAND GAS FIELD



CONTOURS ON TOP OF McCORMICK SAND



COUNTY: SOLANO

LIBERTY ISLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Reserve Oil Inc. "Liberty Farms-Reynolds" 2	Reserve Oil and Gas Co. "Liberty Farms-Reynolds" 2	19 SN 3E	MD	6,500	McCormick	
Deepest well	Cities Service Co. "Mořesco" A-1	Same as present	30 SN 3E	MD	10,011		Confidential

POOL DATA

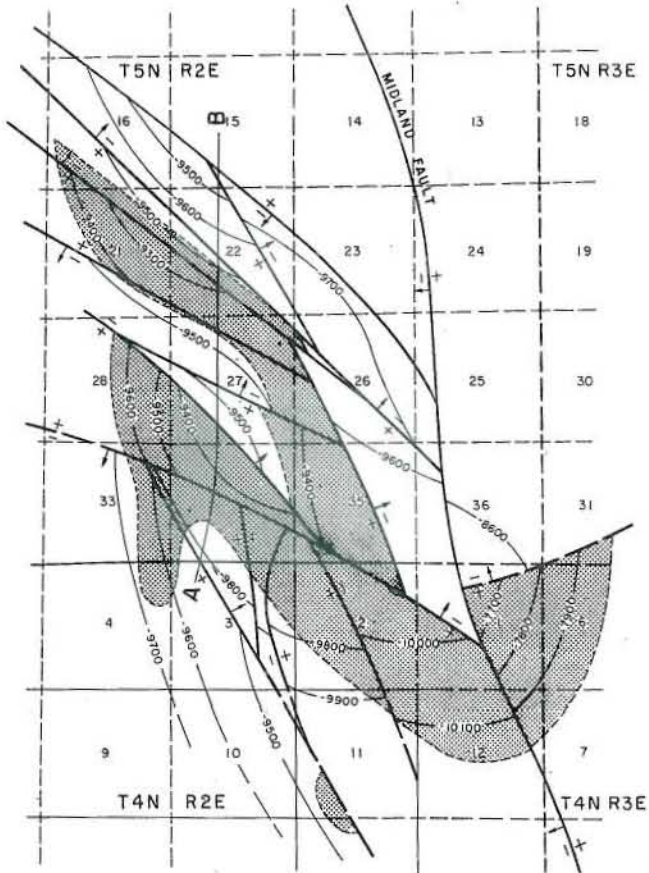
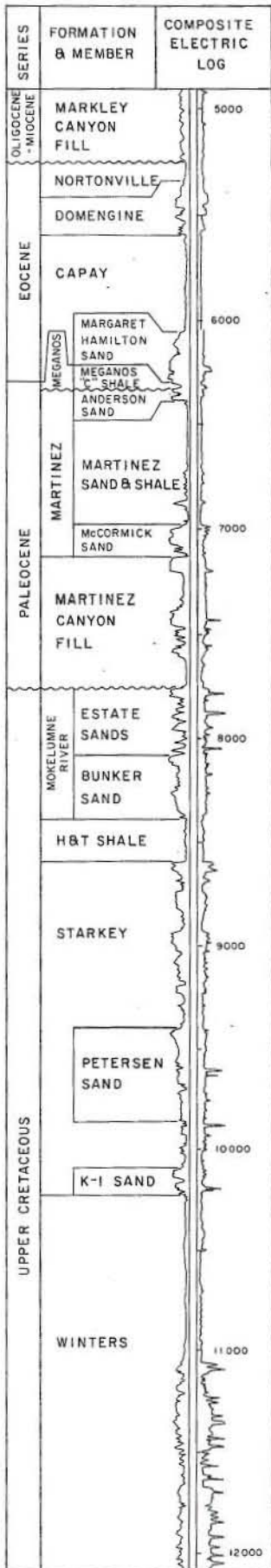
ITEM	McCORMICK					FIELD OR AREA DATA
Discovery date .....	December 1960					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	3,900					
Flow pressure (psi) .....	1,400					
Bean size (in.) .....	3/8					
Initial reservoir pressure (psi) .....	2,020					
Reservoir temperature (°F) .....	123					
Initial oil content (STB/ac-ft.) .....						
Initial gas content (MSCF/ac-ft.) .....	920-1,200					
Formation .....	Martinez					
Geologic age .....	Paleocene					
Average depth (ft.) .....	4,725					
Average net thickness (ft.) .....	30					
Maximum productive area (acres) .....	690					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	25-30†					
Soj (%) .....						
Swj (%) .....	35-40†					
Sgi (%) .....	60-65†					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.572					
Heating value (Btu/cu. ft.) .....	986					
Water:						
Salinity, NaCl (ppm) .....	7,900					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	4,948,162					
Year .....	1963					

Base of fresh water (ft.): 2,500-3,350

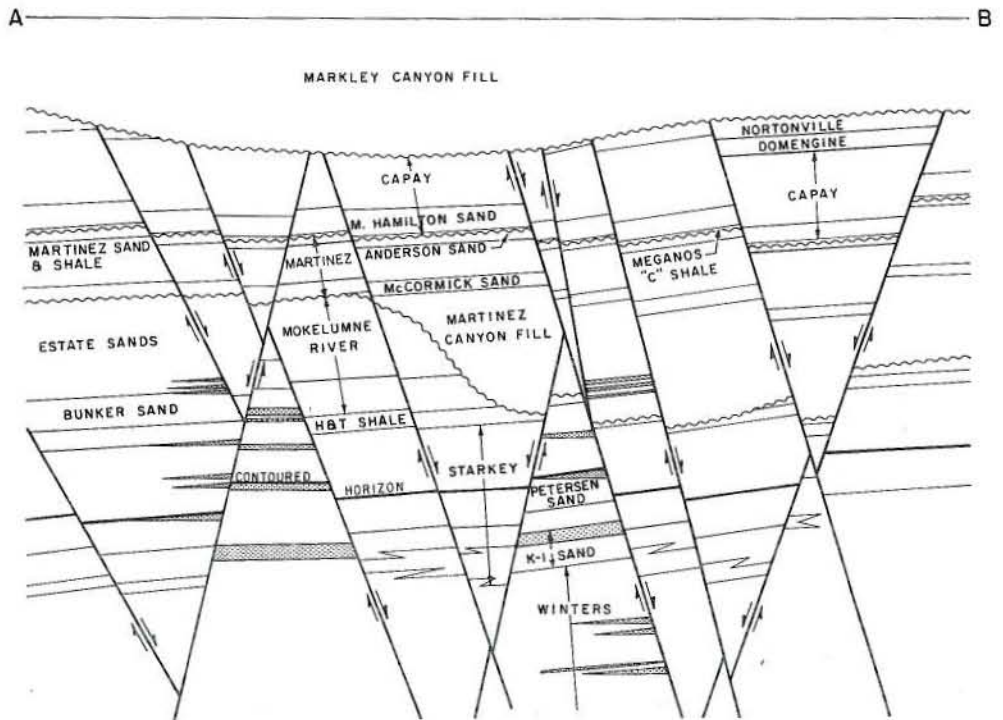
Remarks: Commercial gas deliveries began in August 1961.

Selected References: Beecroft, G. W., 1961, Liberty Island Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 41, No. 1.

# LINDSEY SLOUGH GAS FIELD



CONTOURS ON TOP OF PETERSEN SAND



COUNTY: SOLANO

LINDSEY SLOUGH GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess, Oper. "Union-Pet. Est." 1	Amerada Petroleum Corp. "Petersen" 1	3 4N 2E	MD	10,690	Petersen	
Deepest well	Chevron U.S.A. Inc. "Peter Cook" 16	Standard Oil Co. of Calif. "Peter Cook" 16	10 4N 2E	MD	15,050		Forbes Late Cretaceous

POOL DATA

ITEM	POOL DATA					FIELD OR AREA DATA
	UNNAMED	MCCORMICK	ESTATE	1ST STARKEY	2ND STARKEY	
Discovery date .....	June 1969	March 1963	November 1964	January 1963	December 1965	
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,370	3,120	1,925	3,100	4,500	
Flow pressure (psi) .....	1,720	2,440	2,900	2,640	2,300	
Bean size (in.) .....	3/16		3/4		20/64	
Initial reservoir pressure (psi) .....	3,050	3,120	2,330-3,640	4,070	4,350	
Reservoir temperature (°F) .....	148	150	141-177	181	172	
Initial oil content (STB/ac.-ft.) .....	1,100	1,300-1,600	920-950	930-1,200	980-1,300	
Initial gas content (MSCF/ac.-ft.) .....	Martinez	Martinez	Mokelumne River	Starkey	Starkey	
Formation .....	Paleocene	Paleocene	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Geologic age .....	6,820	6,975	5,480-8,360	8,700	9,025	
Average depth (ft.) .....	25	82	59	47	65	
Average net thickness (ft.) .....						
Maximum productive area (acres) .....						3,145

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	20**	24-28	20-22***	18-22†	18-22†	
So <sub>g</sub> (%) .....	40**	35-40	40-50***	45-50†	45-50†	
Sw <sub>i</sub> (%) .....	60**	60-65	50-60***	50-55†	50-55†	
S <sub>g</sub> (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	1,080	1,080	1,075	1,070	1,080	
Heating value (Btu/cu. ft.) .....						
Water:						
Salinity, NaCl (ppm) .....	860	21,000	16,900	19,900	15,400	
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						16,065,898
Year .....						1971

Base of fresh water (ft.): 2,500-3,000

Remarks: Commercial gas deliveries began in October 1964. Cumulative condensate production through 1979 is 638,099 bbl.

Selected References:



COUNTY: SOLANO

LINDSEY SLOUGH GAS FIELD  
Cont.....

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well							
Deepest well							

POOL DATA

ITEM	FIELD OR AREA DATA		
	PETERSEN	K-1	FIRST WINTERS
Discovery date .....	November 1962	July 1963	June 1969
Initial production rates			
Oil (bbl/day) .....	8,860	2,340	4,650
Gas (Mcf/day) .....	2,570	1,440	2,640
Flow pressure (psi) .....	3/8	1/4	13/64
Bean size (in.) .....			
Initial reservoir pressure (psi) .....	3,330-4,630	4,650	4,320
Reservoir temperature (°F) .....	168-175	180	170
Initial oil content (STB/ac.-ft.) .....			
Initial gas content (MSCF/ac.-ft.) .....	1,100-1,200	970-1,300	790-1,200
Formation .....	Starkey	Starkey	Winters
Geologic age .....	Late Cretaceous	Late Cretaceous	Late Cretaceous
Average depth (ft.) .....	7,665-9,940	10,228	9,130
Average net thickness (ft.) .....	60	94	25
Maximum productive area (acres) .....			

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	19-23 †	17-21	18-22 †
Soj (%) .....			
Swj (%) .....	45-50 †	45-50	50-60 †
Sgi (%) .....	50-55 †	50-55	40-50 †
Permeability to air (md) .....		3-8	

RESERVOIR FLUID PROPERTIES

Oil:			
Oil gravity (°API) .....			
Sulfur content (% by wt.) .....			
Initial solution GOR (SCF/STB) .....			
Initial oil FVF (RB/STB) .....			
Bubble point press. (psia) .....			
Viscosity (cp) @ °F .....			
Gas:			
Specific gravity (air = 1.0) .....			
Heating value (Btu/cu. ft.) .....	1,080	1,070	1,080
Water:			
Salinity, NaCl (ppm) .....	16,950	17,000	1,370
T.D.S. (ppm) .....			
R <sub>w</sub> (ohm/m) (77°F) .....			

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

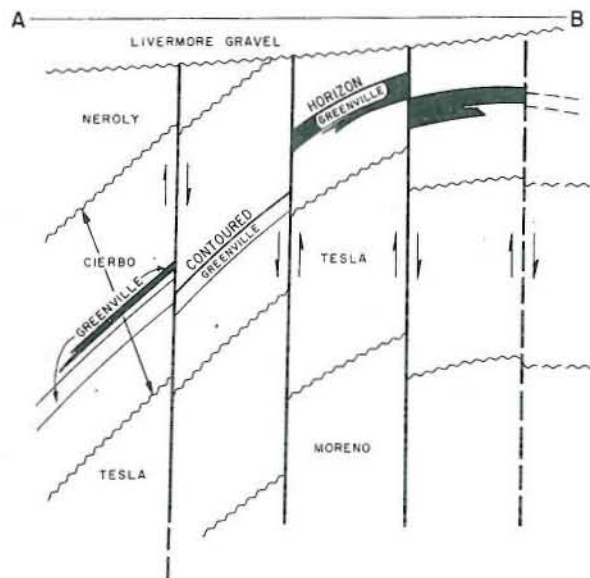
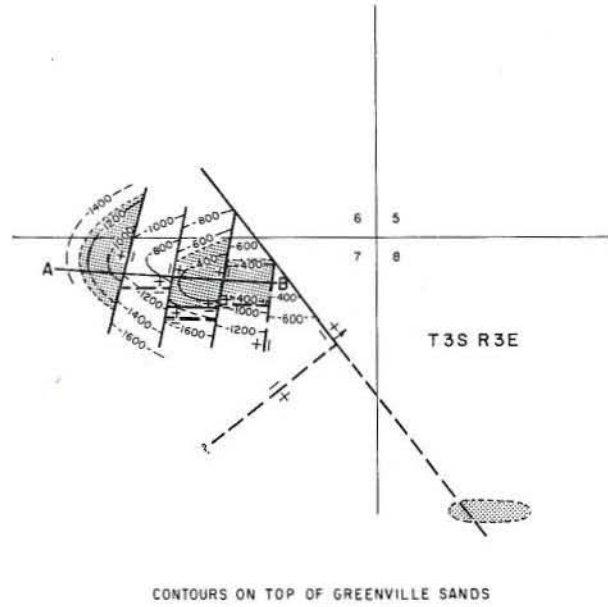
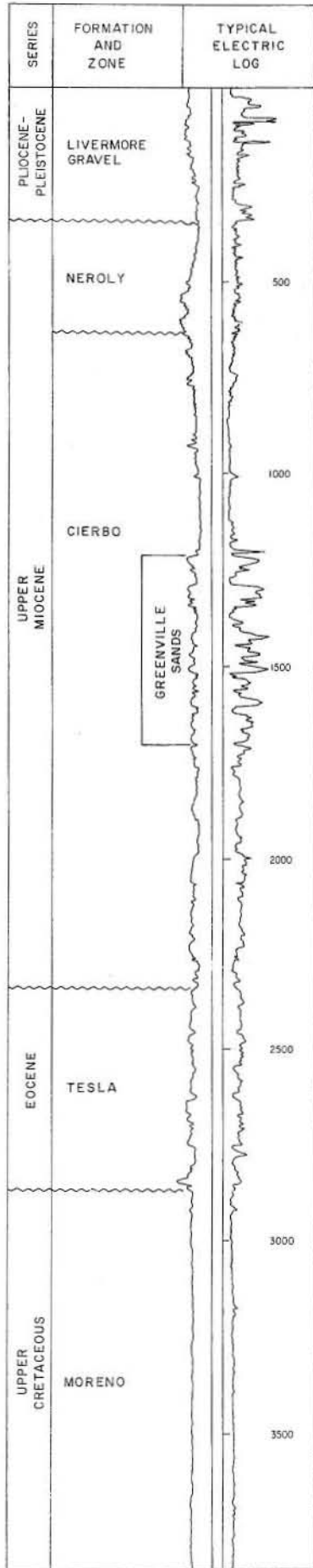
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					

Base of fresh water (ft.):

Remarks:

Selected References:

# LIVERMORE OIL FIELD



COUNTY: ALAMEDA

LIVERMORE OIL FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Hershey Oil Corp. "Greenville Investment Group" 1	McCulloch Oil Corp. of California "Greenville Investment Group" 1	7 3S 3E	MD	2,173	Greenville	
Deepest well	Hershey Oil Corp. "Nissen" 3	McCulloch Oil Corp. of California "Nissen" 3	8 3S 3E	MD	6,819		Moreno Late Cretaceous

POOL DATA

ITEM	GREENVILLE	TESLA				FIELD OR AREA DATA
Discovery date .....	January 1967	October 1967				
Initial production rates						
Oil (bbl/day) .....	397	40				
Gas (Mcf/day) .....						
Flow pressure (psi) .....						
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	104	142				
Reservoir temperature (°F) .....	1,200					
Initial oil content (STB/ac-ft.) .....						
Initial gas content (MSCF/ac-ft.) .....						
Formation .....	Cierbo	Tesla				
Geologic age .....	Late Miocene	Eocene				
Average depth (ft.) .....	900-2,000	5,300				
Average net thickness (ft.) .....	40-250	35				
Maximum productive area (acres) .....						110
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	26	23				
So <sub>i</sub> (%) .....	65	40-45				
Sw <sub>i</sub> (%) .....	35	55-60				
S <sub>gi</sub> (%) .....						
Permeability to air (md) .....	250	-				
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....	21-25	29				
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....	115	-				
Initial oil FVF (RB/STB) .....	1.07	-				
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....						
Heating value (Btu/cu. ft.) .....						
Water:						
Salinity, NaCl (ppm) .....	3,400-9,400	9,400				
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						161,829
Year .....						1969
Peak gas production, net (Mcf)						
Year .....						

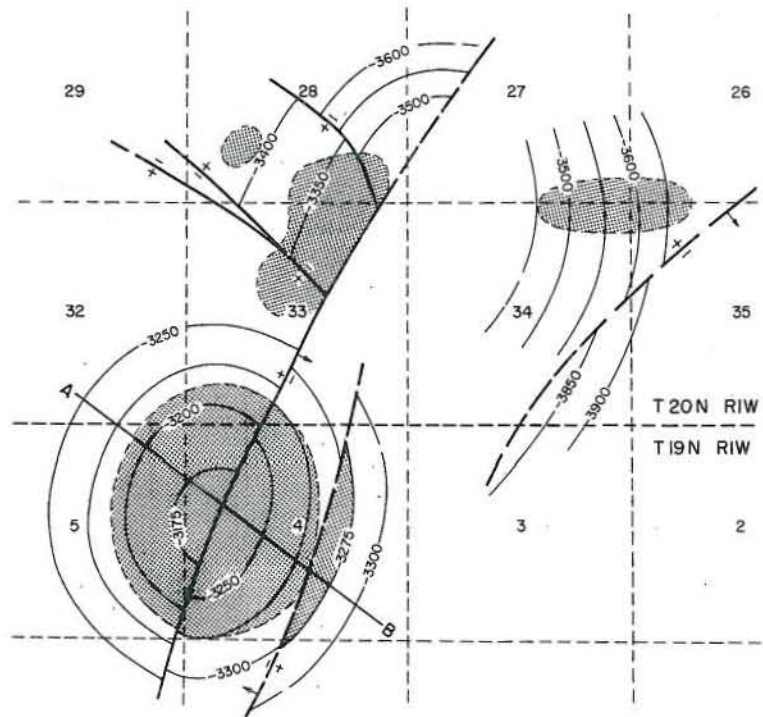
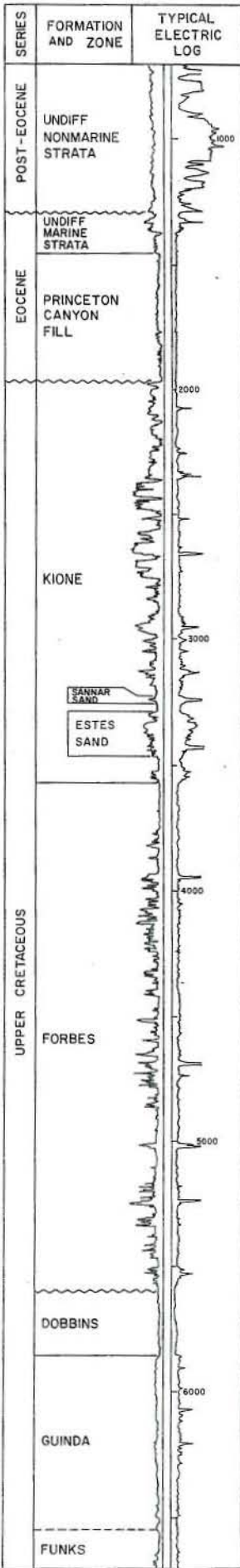
Base of fresh water (ft.): 200

Remarks: Cumulative oil production from the Tesla Formation was 1,670 barrels. One well was completed in October 1967 and abandoned in March 1969.

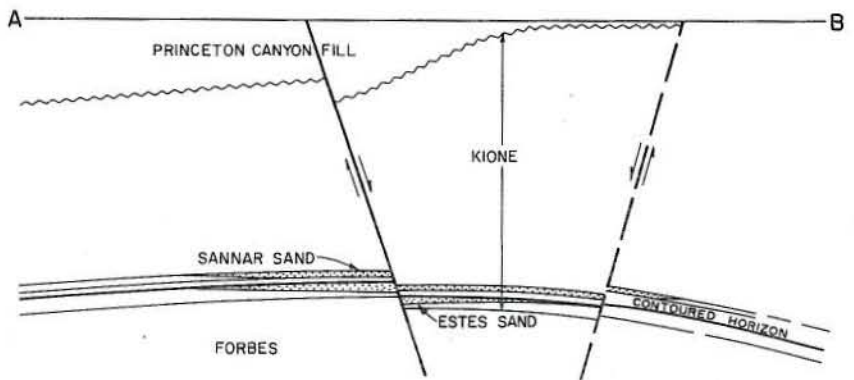
Selected References:

DATE:

# LLANO SECO GAS FIELD



CONTOURS ON TOP OF ESTES SAND



COUNTY: BUTTE and GLENN

LLANO SECO GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Exxon Corp. "Parrott Inv. Co." 2	Humble Oil & Rfg. Co. "Parrott Inv. Co." 2	4 19N 1W	MD	6,700	Sannar-Estes	
Deepest well	Mobil Oil Corp. "Llano Seco" 1	General Petroleum Corp. "Llano Seco" 1	33 20N 1W	MD	8,306		Funks Late Cretaceous

POOL DATA

ITEM	UNNAMED			FIELD OR AREA DATA
	UNNAMED	SANNAR-ESTES	UNNAMED	
Discovery date .....	December 1961	November 1954	October 1961	
Initial production rates				
Oil (bbl/day) .....				
Gas (Mcf/day) .....	3,300	4,030 <sup>a/</sup>	4,000 <sup>b/</sup>	
Flow pressure (psi) .....	605	1,600	1,170	
Bean size (in.) .....	1/2	3/8	3/8	
Initial reservoir pressure (psi) .....	740	1,494-1,762	2,086-2,686	
Reservoir temperature (°F) .....	85	96	103-110	
Initial oil content (STB/ac.-ft.) .....	370	980-1,100	1,200-1,300	
Initial gas content (MSCF/ac.-ft.) .....				
Formation .....	undiff. marine strata	Kione	Forbes	
Geologic age .....	Eocene	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	1,600	3,275	4,550-5,200	
Average net thickness (ft.) .....	20	17	5-20	
Maximum productive area (acres) .....				655

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	25*	26-32***	22-28***	
So <sub>2</sub> (%) .....				
Sw <sub>1</sub> (%) .....	35*	30-35***	35-40***	
Sg <sub>1</sub> (%) .....	65*	65-70***	60-65***	
Permeability to air (md) .....				

RESERVOIR FLUID PROPERTIES

Oil:				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	.570	.580	.570	
Heating value (Btu/cu. ft.) .....	975	960	975	
Water:				
Salinity, NaCl (ppm) .....	8,200	4,100	8,200	
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				

Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				1,207,199
Year .....				1957

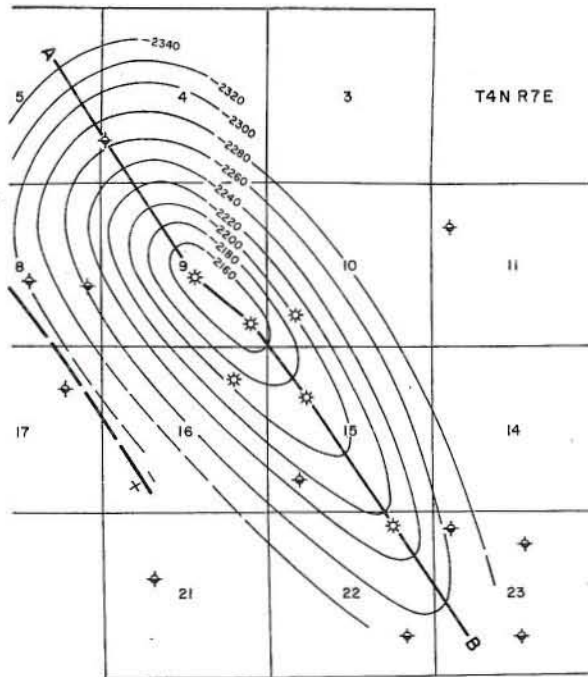
Base of fresh water (ft.): 1,300

Remarks: Commercial gas deliveries began in July 1957.

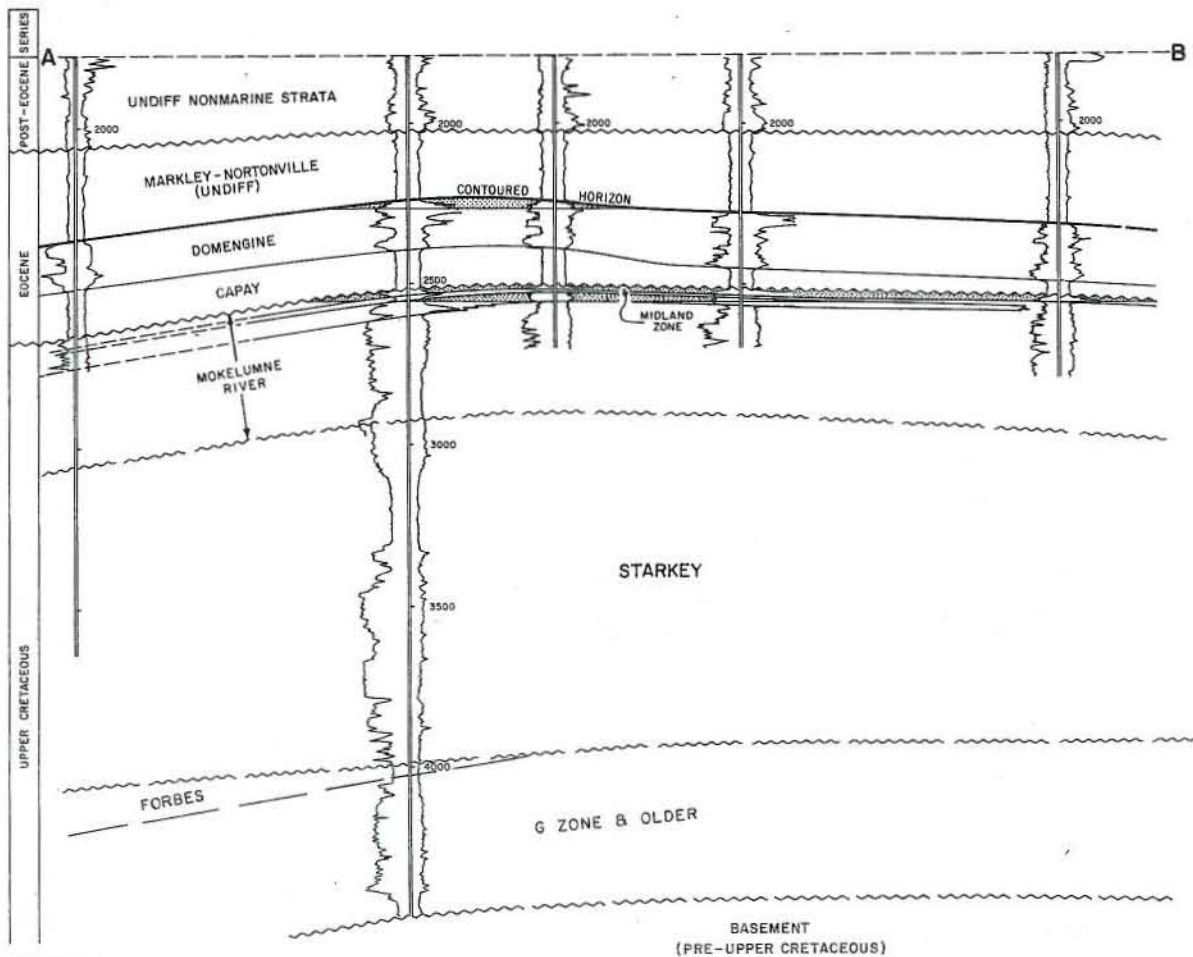
<sup>a/</sup> Production from Sannar and Estes zones commingled in discovery well.  
<sup>b/</sup> Open-hole formation test.

Selected References:

# LODI GAS FIELD (Abandoned)



CONTOURS ON TOP OF DOMENGINE



COUNTY: SAN JOAQUIN

LODI GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess Corp., Unit Oper. "LGZU" 101	Amerada Petroleum Corp. "Community 9" 1	9 4N 7E	MD	4,471	Domengine	
Deepest well	Amerada Hess Corp., Unit Oper. "LGZU" 201	Amerada Petroleum Corp. "Community 10" 1	10 4N 7E	MD	4,495		basement pre-Lt. Cret.

POOL DATA

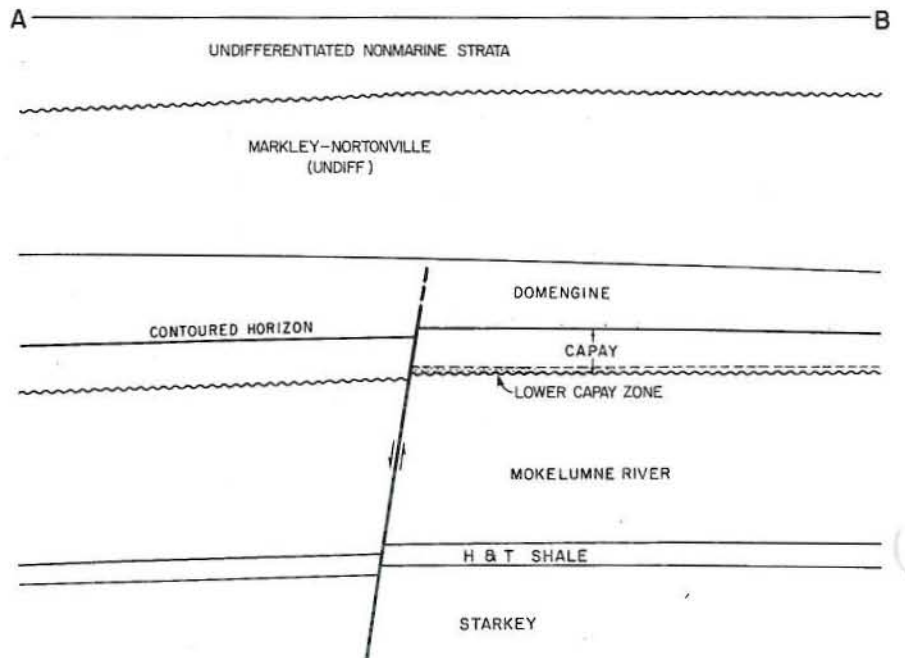
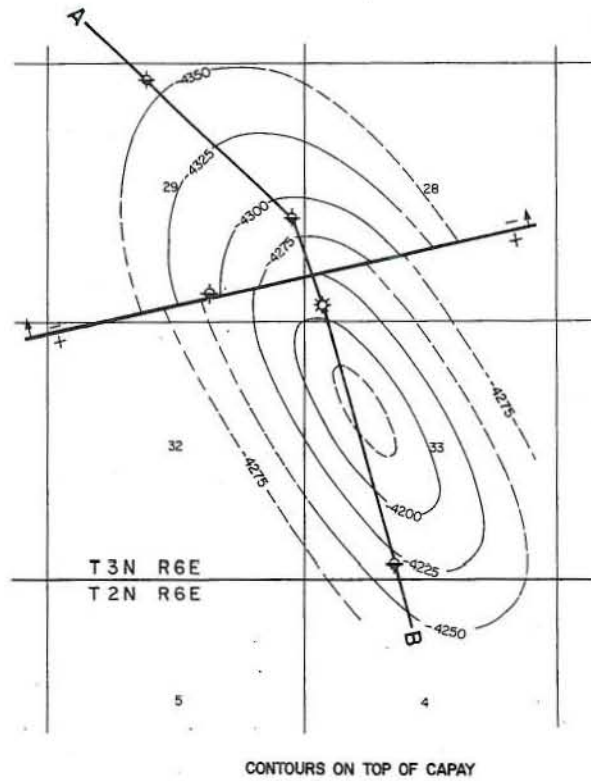
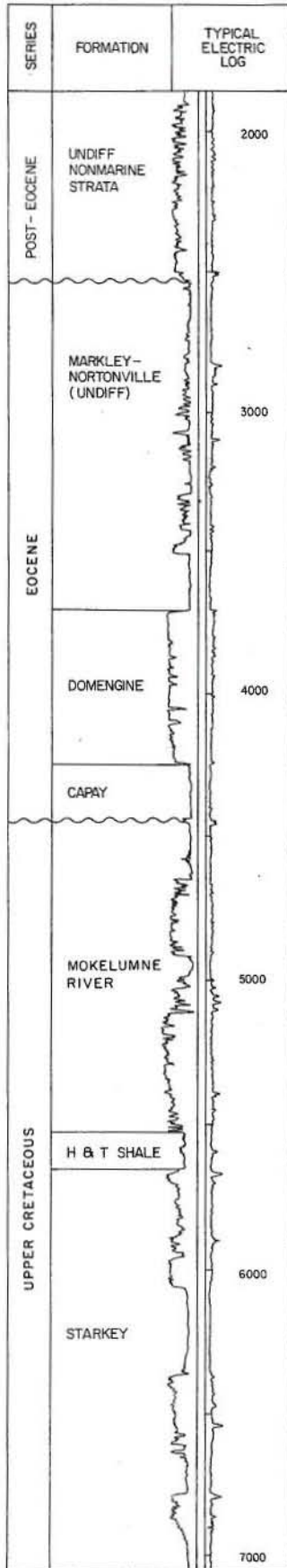
ITEM	POOL DATA				FIELD OR AREA DATA
	DOMENGINE	MIDLAND			
Discovery date .....	April 1943	March 1953			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	7,222	2,800			
Flow pressure (psi) .....	355	906			
Bean size (in.) .....	1/2	3/8			
Initial reservoir pressure (psi) .....	987	1,093			
Reservoir temperature (°F) .....	92	93			
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	800	580-750			
Formation .....	Domengine	Mokelumne River			
Geologic age .....	Eocene	Late Cretaceous			
Average depth (ft.) .....	2,280	2,515			
Average net thickness (ft.) .....	25	35			
Maximum productive area (acres) .....					1,450
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	25-30	25-30***			
So <sub>i</sub> (%) .....					
Sw <sub>i</sub> (%) .....	25	25-30***			
Sg <sub>i</sub> (%) .....	75	70-75***			
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.663††	.683††			
Heating value (Btu/cu. ft.) .....	750	700			
Water:					
Salinity, NaCl (ppm) .....	1,883	3,424			
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl) Year .....					
Peak gas production, net (Mcf) Year .....					1,301,472 1947

Base of fresh water (ft.): 1,700

Remarks: Commercial gas deliveries began in October 1946 and ceased in January 1971. The field was abandoned in March 1972. Six wells were completed and cumulative gas production was 23,204,145 Mcf.

Selected References: Huey, W. F., 1957, Lodi Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 43, No. 1.

# LODI AIRPORT GAS FIELD (Abandoned)





COUNTY: SAN JOAQUIN

LODI AIRPORT GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Great Basins Petroleum Co. "Phillips Olagaray" 1	Same as present	28 3N 6E	MD	7,040	Capay	Starkey
Deepest well	Same as above	"	"	"	"	"	Late Cretaceous

POOL DATA

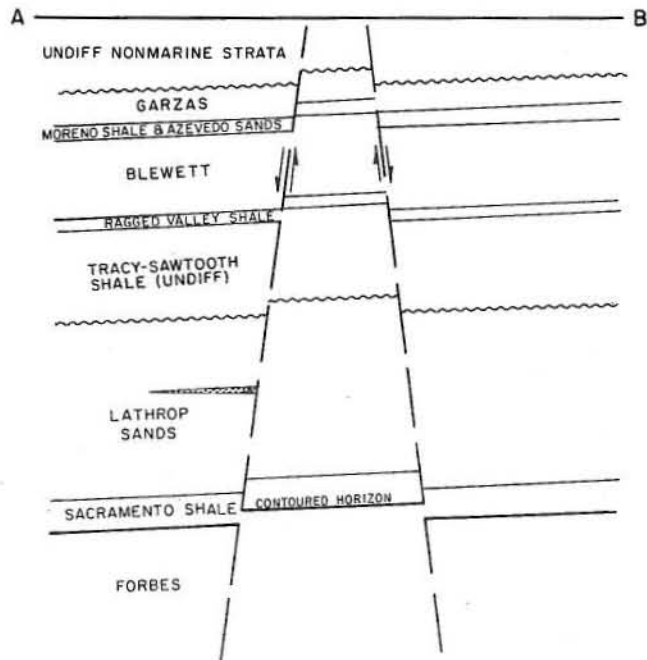
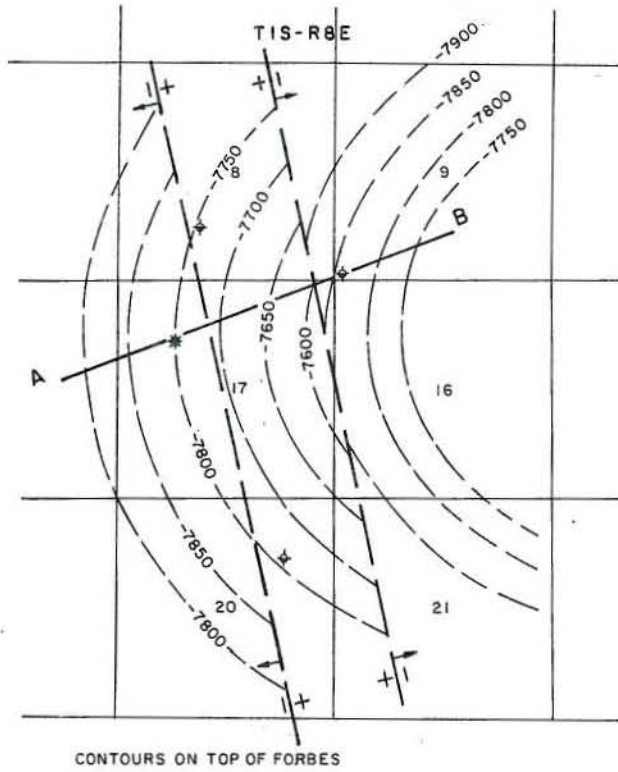
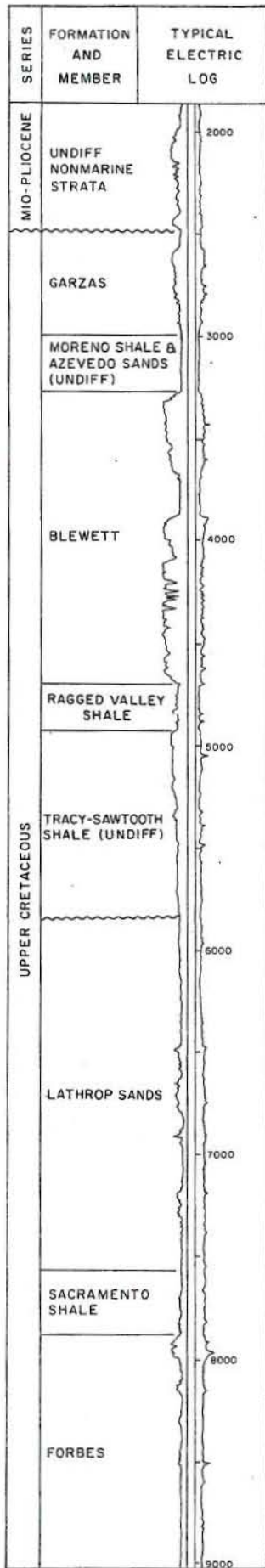
ITEM	CAPAY	FIELD OR AREA DATA				
Discovery date .....	July 1976					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	3,560					
Flow pressure (psi) .....	1,425					
Bean size (in.) .....	20/64					
Initial reservoir pressure (psi) .....	1,920					
Reservoir temperature (°F) .....	123					
Initial oil content (STB/ac.-ft.) .....	1,200					
Initial gas content (MSCF/ac.-ft.) .....	Capay					
Formation .....	Eocene					
Geologic age .....	4,440					
Average depth (ft.) .....	10					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	40					
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	30**					
So <sub>i</sub> (%) .....	30**					
Sw <sub>j</sub> (%) .....	70**					
Sg <sub>g</sub> (%) .....						
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.611					
Heating value (Btu/cu. ft.) .....	882					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	10,134					
Year .....	1978					

Base of fresh water (ft.): 700

Remarks: Commercial gas deliveries began in June 1978. The field was abandoned in May 1979. Only one well was completed and cumulative gas production was 10,134 Mcf.

Selected References:

# LONE TREE CREEK GAS FIELD



COUNTY: SAN JOAQUIN

LONE TREE CREEK GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Texaco Inc. "Vieira" 1	Same as present	17 1S 8E	MD	9,800	Lathrop	Forbes
Deepest well	Same as above	"	"	"	"	"	Late Cretaceous

POOL DATA

ITEM	LATHROP					FIELD OR AREA DATA
Discovery date .....	May 1978					
Initial production rates						
Oil (bbl/day) .....	1,644					
Gas (Mcf/day) .....	1,960					
Flow pressure (psi) .....	3/16					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	3,180					
Reservoir temperature (°F) .....	131					
Initial oil content (STB/ac.-ft.) .....	880					
Initial gas content (MSCF/ac.-ft.) .....	Lathrop					
Formation .....	Late Cretaceous					
Geologic age .....	6,800					
Average depth (ft.) .....	10					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	120					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	20†					
So <sub>g</sub> (%) .....	50**					
Sw <sub>g</sub> (%) .....	50**					
Sg <sub>g</sub> (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.623					
Heating value (Btu/cu. ft.) .....	831					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

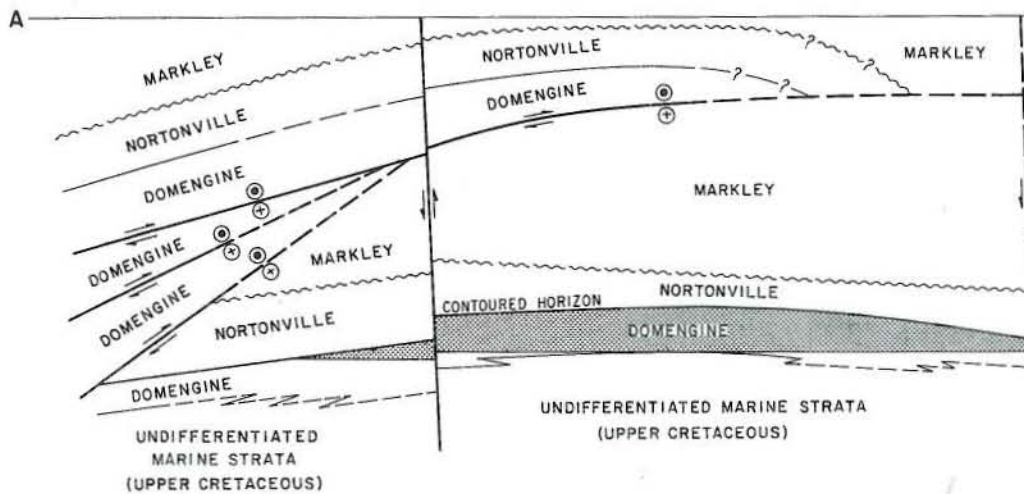
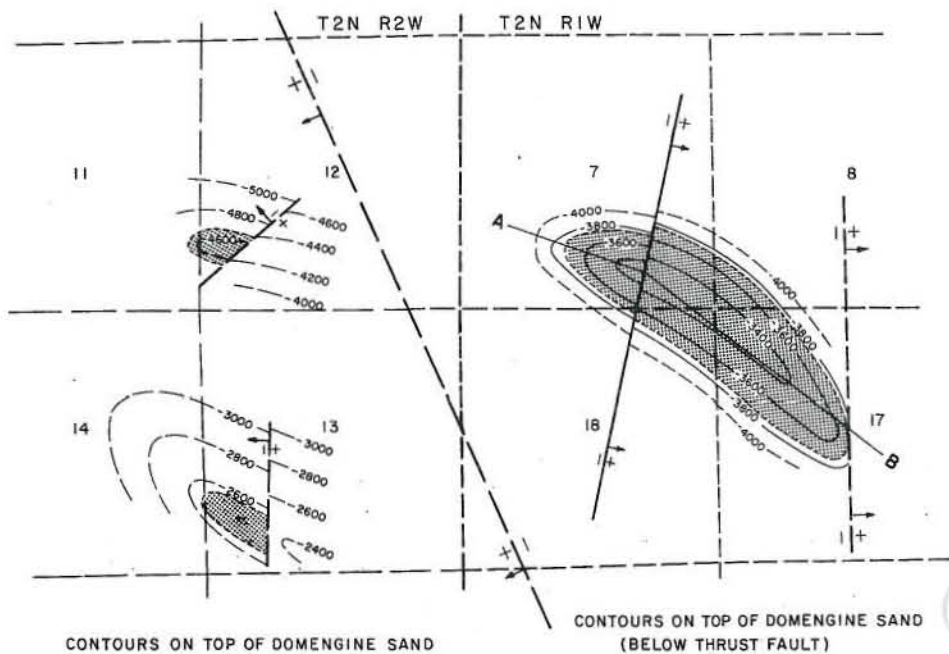
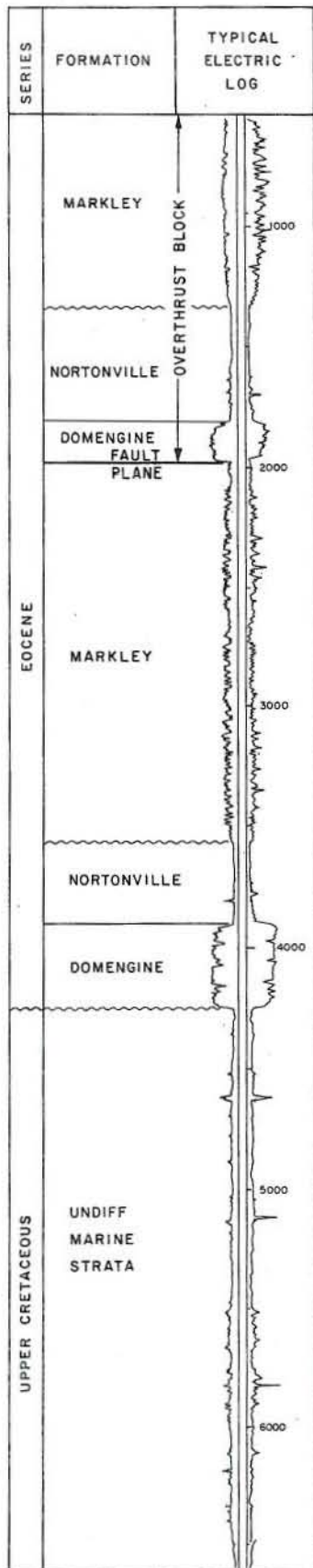
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 1,250

Remarks: Commercial gas deliveries have not yet begun.

Selected References:

# LOS MEDANOS GAS FIELD



COUNTY: CONTRA COSTA

LOS MEDANOS GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Pacific Gas and Electric Co. "Ginochio" 1-18	McCulloch Oil Corp. of Calif. "McCulloch-Macson-Ginochio" 1	18 2N 1W	MD	3,021	Domengine	
Deepest well	Pacific Gas and Electric Co. "Ginochio" 3-7	McCulloch Oil Corp. of Calif. "McCulloch-Ginochio" 3	7 2N 1W	MD	6,941		undiff. marine Late Cretaceous

POOL DATA

ITEM	POOL DATA			FIELD OR AREA DATA
	NORTONVILLE	DOMENGINE	UPPER CRETACEOUS	
Discovery date .....	June 1959	May 1958	April 1962	
Initial production rates				
Oil (bbl/day) .....				
Gas (Mcf/day) .....	1,500	1,600	690	
Flow pressure (psi) .....	425	425	820	
Bean size (in.) .....	3/8	24/64	3/16	
Initial reservoir pressure (psi) .....	1,665	1,760	1,570	
Reservoir temperature (°F) .....	114	112	-	
Initial oil content (STB/ac.-ft.) .....	900	1,300	-	
Initial gas content (MSCF/ac.-ft.) .....				
Formation .....	Nortonville	Domengine	Upper Cretaceous	
Geologic age .....	Eocene	Eocene	Late Cretaceous	
Average depth (ft.) .....	4,300	4,000	2,800	
Average net thickness (ft.) .....	40	150	10	
Maximum productive area (acres) .....				390

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	26	30		
S <sub>oi</sub> (%) .....				
S <sub>wi</sub> (%) .....	35	22		
S <sub>gi</sub> (%) .....	65	78		
Permeability to air (md) .....	-	500		

RESERVOIR FLUID PROPERTIES

Oil:				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	1,020	1,020	975	
Heating value (Btu/cu. ft.) .....				
Water:				
Salinity, NaCl (ppm) .....		10,800		
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				

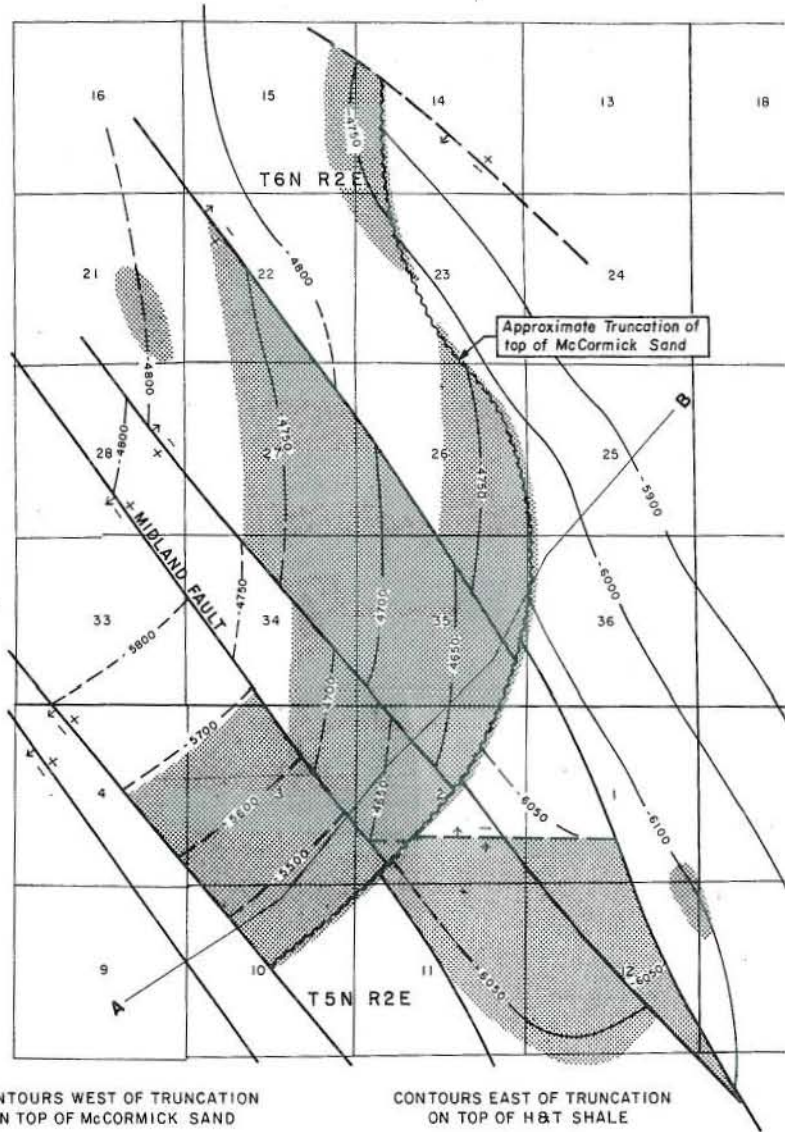
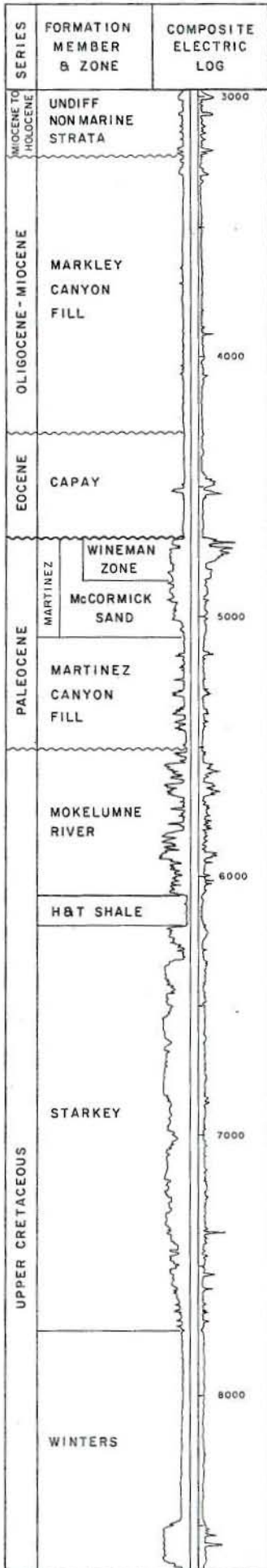
Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				5,033,197
Year .....				1961

Base of fresh water (ft.): 150-1,000

Remarks: Commercial gas deliveries began in November 1958. One well was completed in the Upper Cretaceous zone; it was abandoned in December 1962. Pacific Gas and Electric Co. acquired the field in September 1975 and converted it to gas storage. The working gas storage capacity is 15,400,000 Mcf with an approximate maximum withdrawal rate of 230,000 Mcf/day.

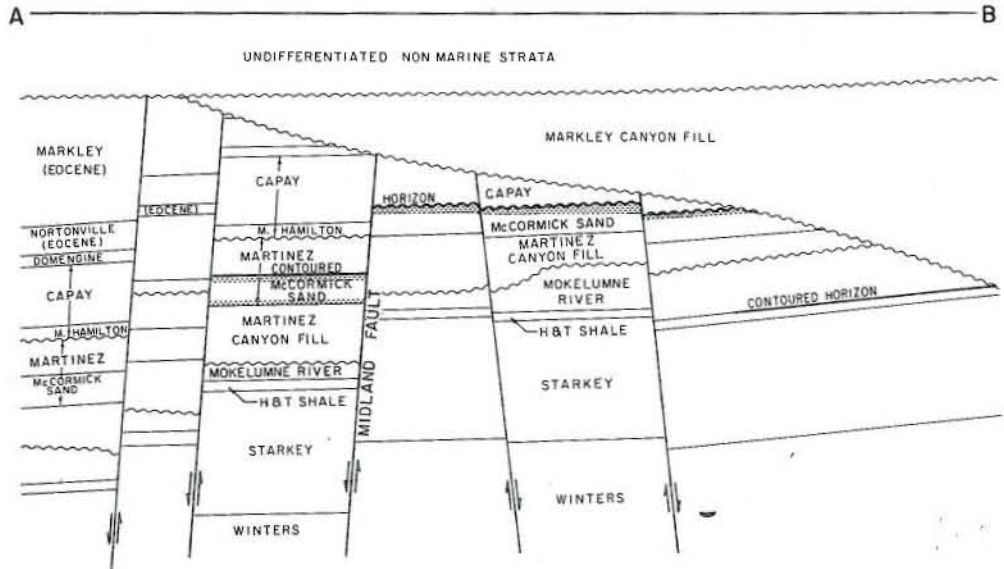
Selected References: Matthews, J. F., Jr., 1963, Los Medanos Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 49, No. 1.

# MAINE PRAIRIE GAS FIELD



CONTOURS WEST OF TRUNCATION  
ON TOP OF McCORMICK SAND

CONTOURS EAST OF TRUNCATION  
ON TOP OF H&T SHALE



COUNTY: SOLANO

MAINE PRAIRIE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess Corp. "WZUP" 4	Amerada Petroleum Corp. "I. & L. Wineman"	26 6N 2E	MD	5,000	Wineman	
Deepest well	Atlantic Oil Co. "Moresco Brothers" 1	Same as present	12 5N 2E	MD	9,834 <sup>a/</sup>		Winters Late Cretaceous

POOL DATA

ITEM	POOL DATA					FIELD OR AREA DATA
	DOMENGINE <sup>b/</sup>	WINEMAN <sup>b/</sup>	UNNAMED <sup>c/</sup>	PETERS <sup>c/</sup>	BUNKER <sup>b/</sup>	
Discovery date .....	July 1966	March 1945	January 1960	July 1956	October 1951	
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	2,560	19,000	2,420	2,140	11,500	
Flow pressure (psi) .....	1,600	1,760	1,470	2,420	1,850	
Bean size (in.) .....	1/4	3/4	10/64	13/64	3/8	
Initial reservoir pressure (psi) .....	1,790	2,135	2,560	2,880	2,535	
Reservoir temperature (°F) .....	112	116	129	135	128	
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	630-900	990-1,300	1,100-1,500	1,200-1,500	1,400-1,800	
Formation .....	Domengine	Martinez	Martinez	Mokelumne River	Mokelumne River	
Geologic age .....	Eocene	Paleocene	Paleocene	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	4,150	4,740	5,935	6,440	5,740	
Average net thickness (ft.) .....	6	40	20	60	35	
Maximum productive area (acres) .....						2,410

RESERVOIR ROCK PROPERTIES

	DOMENGINE <sup>b/</sup>	WINEMAN <sup>b/</sup>	UNNAMED <sup>c/</sup>	PETERS <sup>c/</sup>	BUNKER <sup>b/</sup>	
Porosity (%) .....	20-26†	24-29†	24-28	22-26***	27-31	
Soj (%) .....						
Swj (%) .....	40-45***	35-40†	35-40***	35-40***	30-35	
Sgi (%) .....	55-60***	60-65†	60-65***	60-65***	65-70	
Permeability to air (md) .....	-	-	8-80	-	-	

RESERVOIR FLUID PROPERTIES

	DOMENGINE <sup>b/</sup>	WINEMAN <sup>b/</sup>	UNNAMED <sup>c/</sup>	PETERS <sup>c/</sup>	BUNKER <sup>b/</sup>	
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.562	.590††	.613	.610††	.620††	
Heating value (Btu/cu. ft.) .....	1,005	1,020	1,075	1,065	1,080	
Water:						
Salinity, NaCl (ppm) .....	-	5,992	685	17,120	68	
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						8,924,860 1971

Base of fresh water (ft.): 2,700

Remarks: Formerly known as Duck Slough Gas area. 1979 condensate production was 3,887 barrels; cumulative condensate production was 164,118 barrels. Commercial gas deliveries began in July 1947.

- a/ Directional well, true vertical depth is 9,448 feet.
- b/ East of Midland fault.
- c/ West of Midland fault.

Selected References:

COUNTY: SOLANO

MAINE PRAIRIE GAS FIELD  
Cont.....

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well							
Deepest well							

POOL DATA

ITEM	H & T SAND b/		WINTERS b/		FIELD OR AREA DATA	
Discovery date .....	December 1951		December 1974			
Initial production rates						
Oil (bbl/day) .....	5,200		1,200			
Gas (Mcf/day) .....	2,090					
Flow pressure (psi) .....	5/16					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	2,695		3,950			
Reservoir temperature (°F) .....	131		165			
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	1,500-1,800		870-1,200			
Formation .....	Starkey		Winters			
Geologic age .....	Late Cretaceous		Late Cretaceous			
Average depth (ft.) .....	6,160		8,300			
Average net thickness (ft.) .....	25		30			
Maximum productive area (acres) .....						

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	27-30	18-22†				
Soj (%) .....						
Swj (%) .....	30-35	50-55†				
Sgj (%) .....	65-70	45-50†				
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.613	.636				
Heating value (Btu/cu. ft.) .....	1,075	983				
Water:						
Salinity, NaCl (ppm) .....	14,466					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

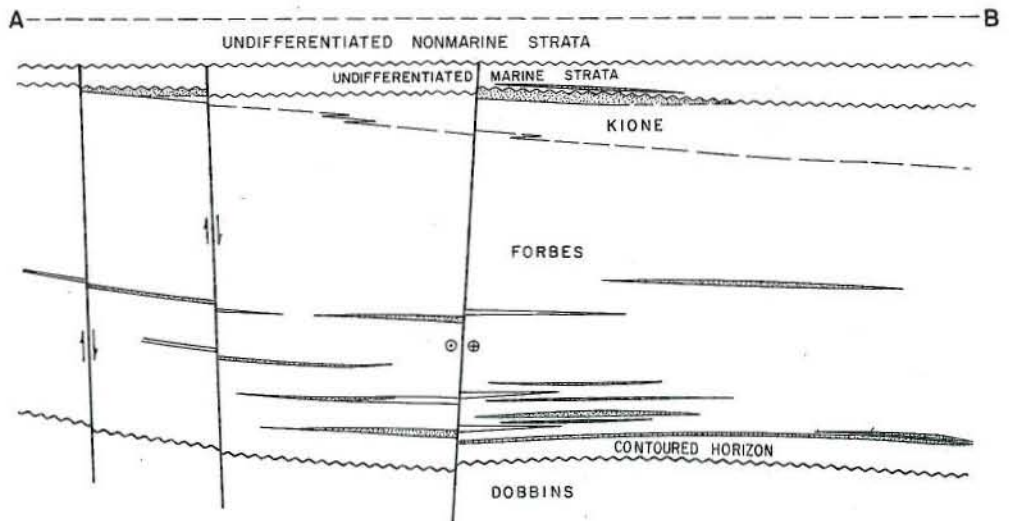
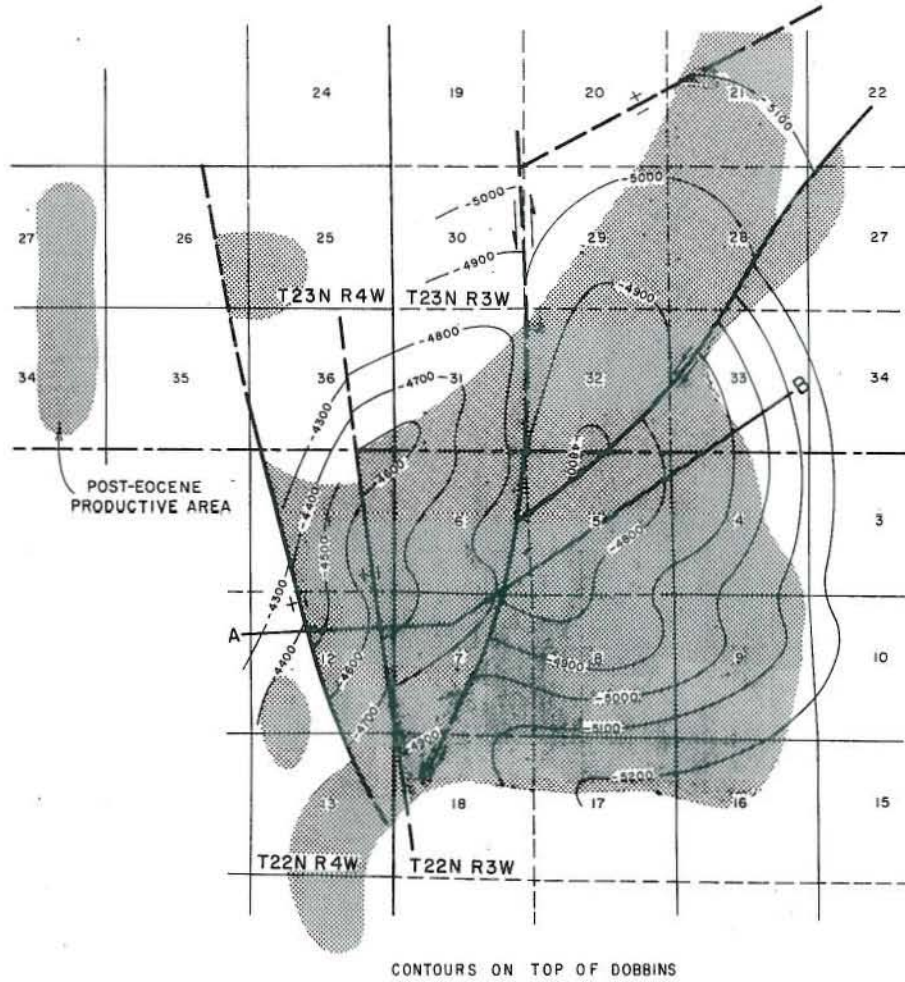
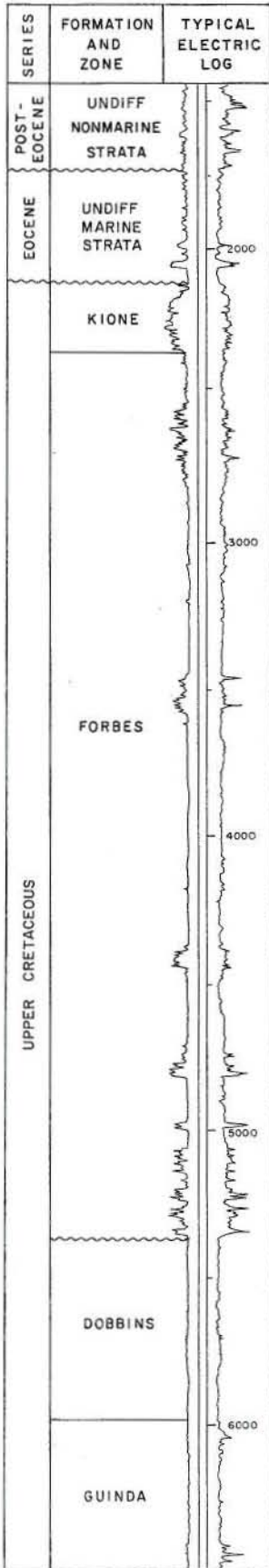
Base of fresh water (ft.):

Remarks:  
b/ East of Midland fault.

Selected References:



# MALTON-BLACK BUTTE GAS FIELD



COUNTY: GLENN and TEHAMA

MALTON—BLACK BUTTE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Exxon Corp. "H-T Malton Unit 1" 1	Humble Oil & Refining Co. "H-T Malton Unit 1" 1	5 22N 3W	MD	5,480	Forbes	
Deepest well	Bender Oil Operations "Bryan" 1	Same as present	33 23N 3W	MD	6,692		Guinda Late Cretaceous

POOL DATA

ITEM	FIELD OR AREA DATA				
	TEHAMA	UNDIFF. MARINE STRATA	KIONE	FORBES	
Discovery date .....	September 1975	January 1969	December 1966	October 1964	
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	1,436	1,070 a/	1,500	1,740 & 1,250 b/	
Flow pressure (psi) .....	400		730	1,480-750	
Bean size (in.) .....	3/8	1/4	12/64	17/64-3/8	
Initial reservoir pressure (psi) .....	592	760	860	1,580-2,940	
Reservoir temperature (°F) .....	90	89	89-93	100-125	
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	220-350	280-460	400-490	640-770	
Formation .....	undiff. nonmarine post-Eocene	undiff. marine Eocene	Kione Late Cretaceous	Forbes Late Cretaceous	
Geologic age .....					
Average depth (ft.) .....	1,550	1,900	1,900-2,200	3,250-4,950	
Average net thickness (ft.) .....	70	10	50	5-40	
Maximum productive area (acres) .....					9,350

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	25-33	20-30	25-28 †	18-25
So <sub>i</sub> (%) .....				
Sw <sub>i</sub> (%) .....	30-35	35-40 **	35-40 †	40-50
Sg <sub>i</sub> (%) .....	65-70	60-65 **	60-65 †	50-60
Permeability to air (md) .....	-	-	-	100-1,200

RESERVOIR FLUID PROPERTIES

Oil:				
Oil gravity (*API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	.557	.557	.557	.557
Heating value (Btu/cu. ft.) .....	1,010	1,010	1,010	1,010
Water:				
Salinity, NaCl (ppm) .....	-	-	18,000	21,600
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				

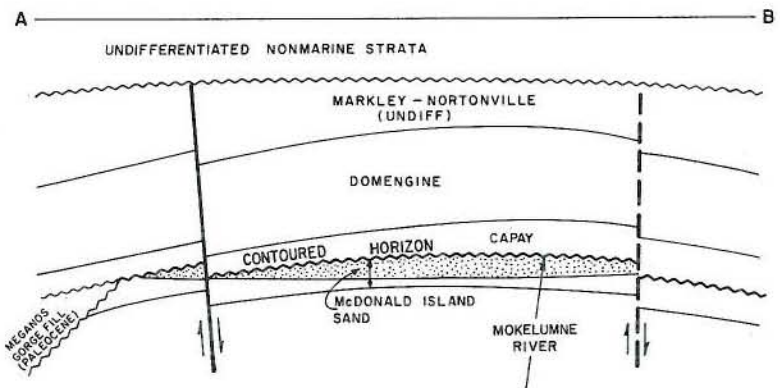
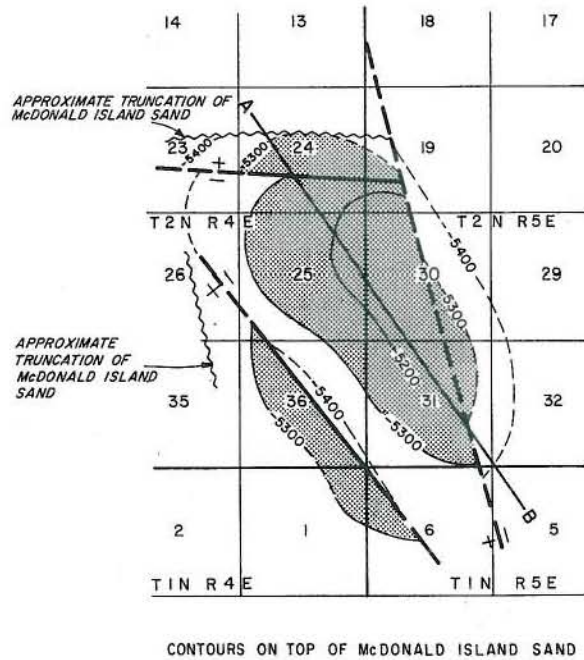
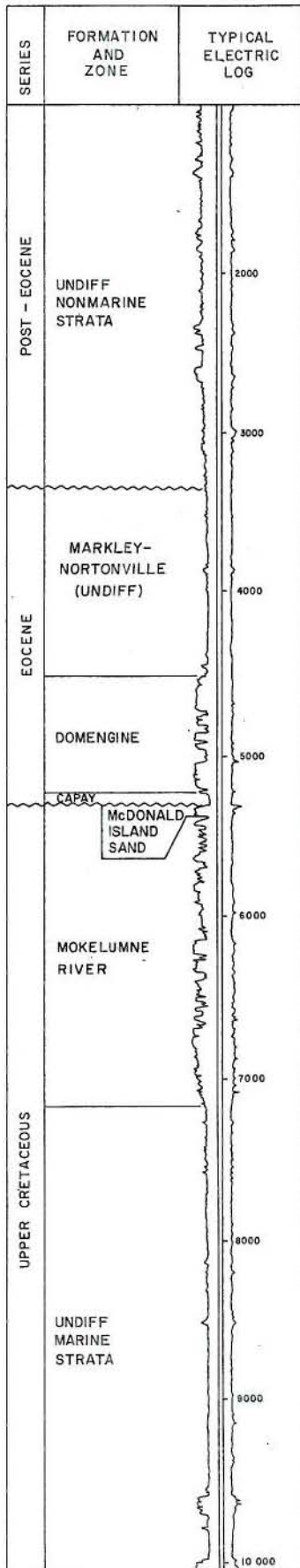
Peak oil production (bbl) Year .....				
Peak gas production, net (Mcf) Year .....				8,006,641 1973

Base of fresh water (ft.): 1,500-1,800

Remarks: Commercial gas deliveries began in December 1966.  
a/ Commingled with production from the Kione formation.  
b/ Completed from two intervals in the Forbes Formation.

Selected References:

# McDONALD ISLAND GAS FIELD



COUNTY - SAN JOAQUIN

**McDONALD ISLAND GAS FIELD**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Pacific Gas and Electric Co. "McDonald Island Farms" 1	Standard Oil Co. of Calif. "McDonald Island Farms" 1	25 2N 4E	MD	5,227	McDonald Island	
Deepest well	Union Oil Co. of Calif. "McDonald Island" 1	Same as present	24 2N 4E	MD	12,502		undiff. marine Late Cretaceous

**POOL DATA**

ITEM	McDONALD ISLAND					FIELD OR AREA DATA
Discovery date .....	May 1936					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	26,650					
Flow pressure (psi) .....	2,080					
Bean size (in.) .....	3/4					
Initial reservoir pressure (psi) .....	2,350					
Reservoir temperature (°F) .....	142					
Initial oil content (STB/ac.-ft.) .....	1,700					
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Mokelumne River					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	5,220					
Average net thickness (ft.) .....	45					
Maximum productive area (acres) .....	2,140					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	31-34					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	25					
Sg <sub>g</sub> (%) .....	75					
Permeability to air (md) .....	1,500					
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.61					
Heating value (Btu/cu. ft.) .....	1,067					
Water:						
Salinity, NaCl (ppm) .....	12,000					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbi)						
Year .....						
Peak gas production, net (Mcf)	15,062,989					
Year .....	1972					

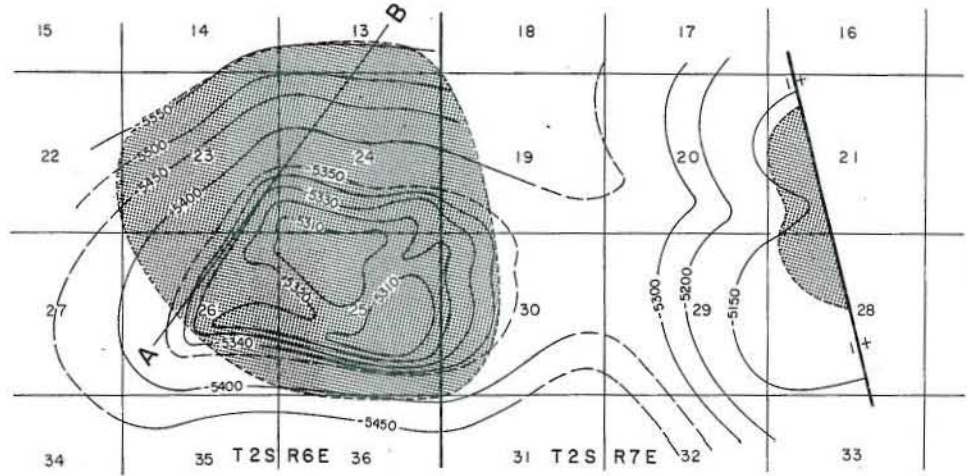
Base of fresh water (ft.): 50-100

Remarks: Commercial gas deliveries began in April 1937. Pacific Gas & Electric Co. acquired the field in December 1958 and converted it to gas storage in August 1959. The working gas storage capacity is 82,600,000 Mcf with an approximate maximum withdrawal rate of 1,140,000 Mcf/day.

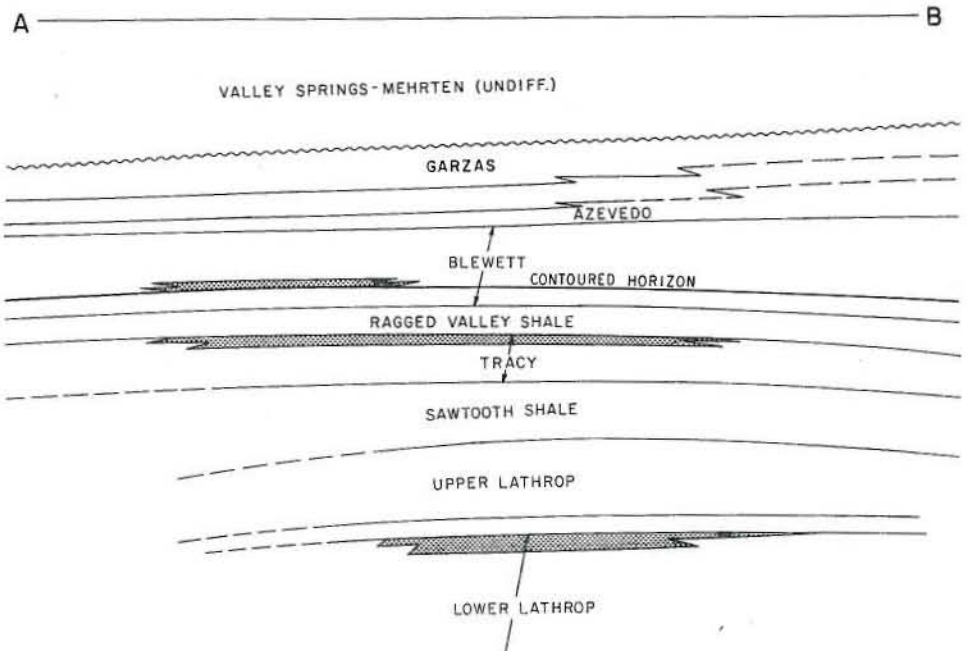
Selected References: Knox, G. L., 1943, McDonald Island Gas Field in Geologic Formations and Economic Development of the Oil and Gas Fields of Calif.: Calif. Div. of Mines Bull. 118, p. 588-590.  
 Railroad Commission of the State of Calif. and Calif. Div. of Oil and Gas, McDonald Gas Field in Estimate of the Natural Gas Reserves of the State of Calif. as of January 1, 1946: Case No. 4591, Special Study No. S-525, p. 40-42 (1946).

# McMULLIN RANCH GAS FIELD

SERIES	FORMATION	MEMBER & ZONE	TYPICAL ELECTRIC LOG
MIOCENE - PLIOCENE	VALLEY SPRINGS-MEHRTEN (UNDIFF.)		
	MORENO	GARZAS AZEVEDO	
UPPER CRETACEOUS	PANOCHÉ	BLEWETT	
		CONTOURED HORIZON	
		RAGGED VALLEY SHALE	
		TRACY	
		SAWTOOTH SHALE	
		UPPER LATHROP	
		LOWER LATHROP	



CONTOURS ON BLEWETT ELECTRIC LOG MARKER



COUNTY: SAN JOAQUIN

MCMULLIN RANCH GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Great Basins Petroleum Co. "Signet-Perrin" 33-25	Same as present	25 2S 6E	MD	6,350	Blewett	
Deepest well	Great Basins Petroleum Co. "Occidental-Whiting" 66X-23	Same as present	23 2S 6E	MD	9,988		Panoche Late Cretaceous

POOL DATA

ITEM	POOL DATA			FIELD OR AREA DATA
	BLEWETT	TRACY	E-ZONE	
Discovery date .....	May 1960	May 1960	June 1963	
Initial production rates				
Oil (bbl/day) .....				
Gas (Mcf/day) .....	6,020	2,740	5,200	
Flow pressure (psi) .....	1,725	775	2,260	
Bean size (in.) .....	3/8	3/8	5/16	
Initial reservoir pressure (psi) .....	2,415	2,900	3,625-4,120	
Reservoir temperature (*F) .....	140	140	172	
Initial oil content (STB/ac.-ft.) .....				
Initial gas content (MSCF/ac.-ft.) .....	1,200-1,500	1,400-1,800	1,400-1,600	
Formation .....	Panoche	Panoche	Panoche	
Geologic age .....	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	4,525	6,005	7,200	
Average net thickness (ft.) .....	2-30	2-15	3-30	
Maximum productive area (acres) .....				3,030

RESERVOIR ROCK PROPERTIES

ITEM	BLEWETT	TRACY	E-ZONE	FIELD OR AREA DATA
Porosity (%) .....	26-30	26-30	23-27***	
Soj (%) .....				
Swi (%) .....	30-35	30-35	35-40***	
Sgi (%) .....	65-70	65-70	60-65***	
Permeability to air (md) .....	597	117		

RESERVOIR FLUID PROPERTIES

ITEM	BLEWETT	TRACY	E-ZONE	FIELD OR AREA DATA
Oil:				
Oil gravity (*API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ *F .....				
Gas:				
Specific gravity (air = 1.0) .....	.610††	.610††	.620††	
Heating value (Btu/cu. ft.) .....	895	895	870	
Water:				
Salinity, NaCl (ppm) .....	10,200	7,900	12,000-23,300	
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

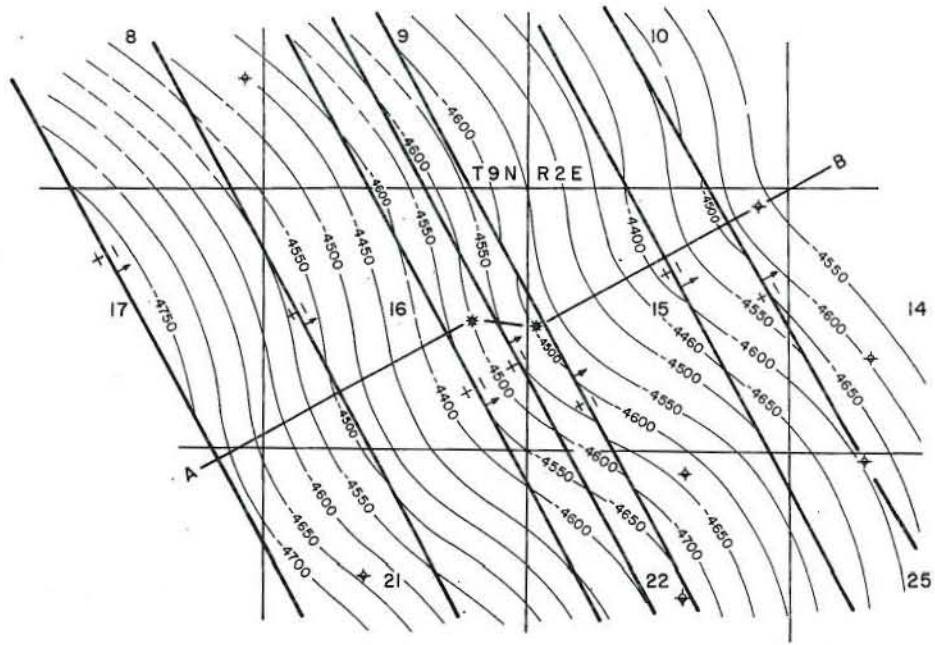
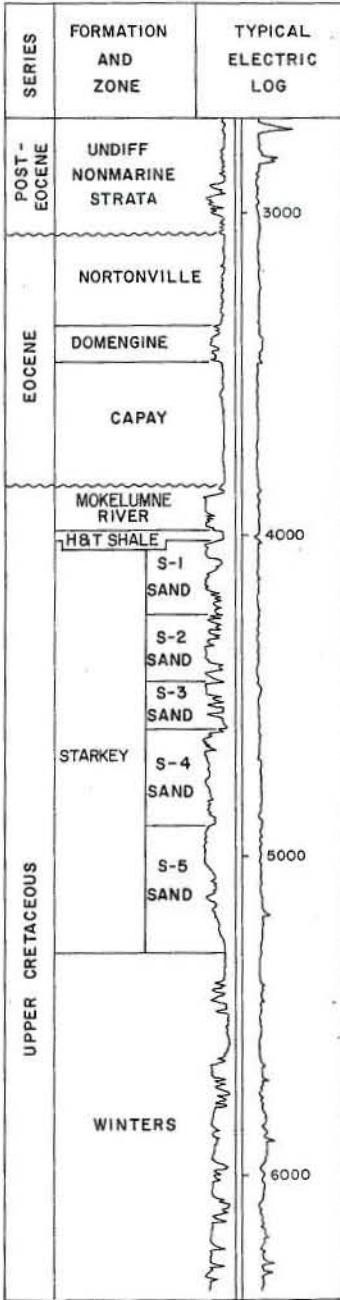
ITEM	BLEWETT	TRACY	E-ZONE	FIELD OR AREA DATA
Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				
Peak oil production (bbl) .....				
Year .....				
Peak gas production, net (Mcf) .....				10,790,606
Year .....				1965

Base of fresh water (ft.): Above 500

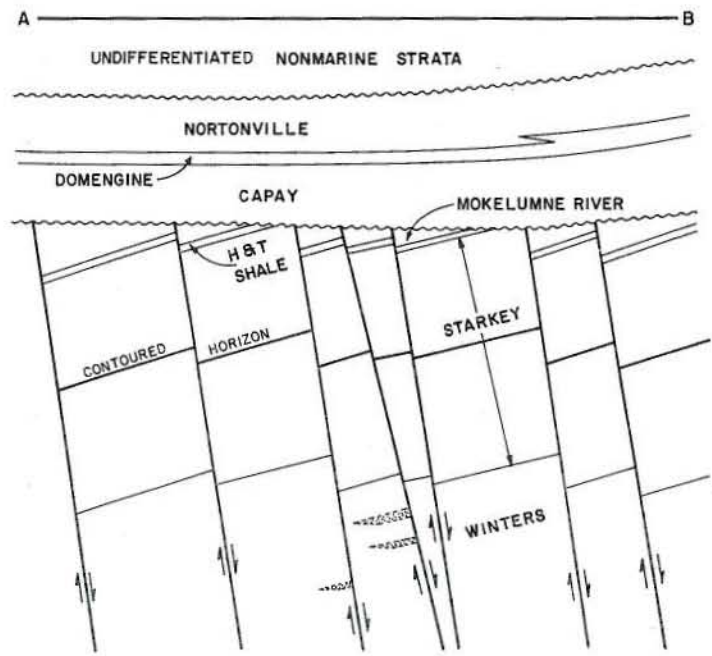
Remarks: Dual completions from the Blewett and Tracy zones are common. Gas production from sand strings in the lower portion of the "Ragged Valley" is often commingled with Tracy zone production and considered part of the zone.

Selected References: Hunter, W. J., and Beecroft, G. W., 1960, McMullin Ranch Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 46, No. 2.

# MERRITT GAS FIELD



CONTOURS ON TOP OF S-4 SAND



COUNTY: YOLO

MERRITT GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "Russell" 1-15	Same as present	15 9N 2E	MD	6,712 <sup>a/</sup>	Winters	
Deepest well	Texaco, Inc. "Transamerica" 1-16	Same as present	16 9N 2E	MD	6,800		Winters Late Cretaceous

POOL DATA

ITEM	WINTERS					FIELD OR AREA DATA
Discovery date .....	November 1974					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	17,500					
Flow pressure (psi) .....						
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	2,500					
Reservoir temperature (°F) .....	120					
Initial oil content (STB/ac.-ft.) .....	960-1,200					
Initial gas content (MSCF/ac.-ft.) .....	Winters					
Formation .....	Late Cretaceous					
Geologic age .....						
Average depth (ft.) .....	5,550					
Average net thickness (ft.) .....	15					
Maximum productive area (acres) .....	160					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	25-29 †					
So <sub>g</sub> (%) .....	45-50 †					
Sw <sub>g</sub> (%) .....	50-55 †					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	-					
Heating value (Btu/cu. ft.) .....	910					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	415,534					
Year .....	1979					

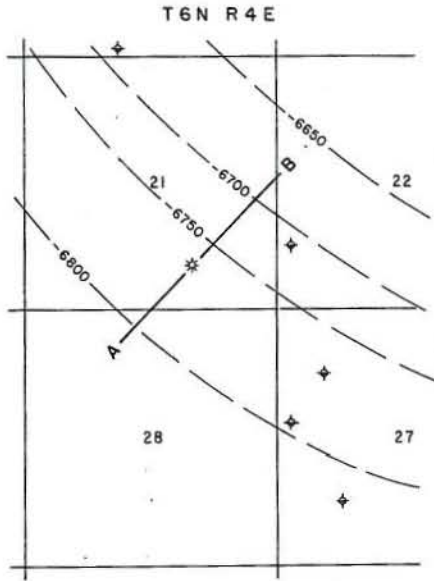
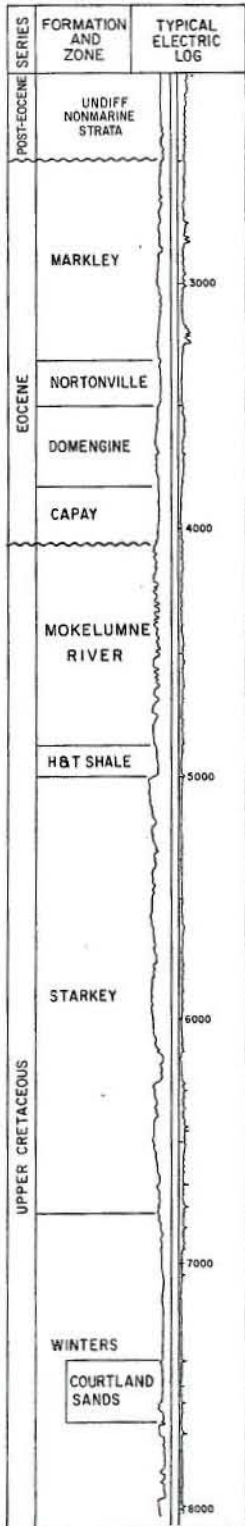
Base of fresh water (ft.): 2,250

Remarks: Commercial gas deliveries began in February 1977  
 a/ Directional well, true vertical depth is 6,703 feet.

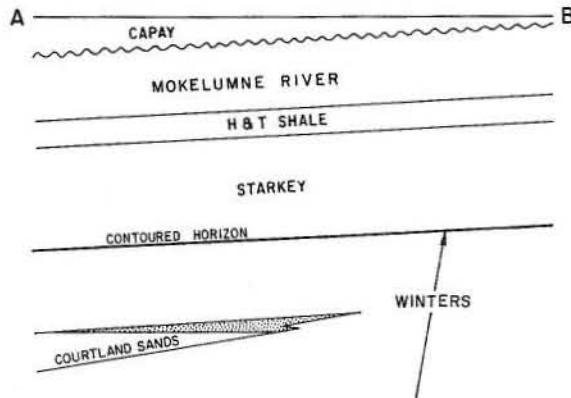
Selected References:



# MERRITT ISLAND GAS FIELD



CONTOURS ON TOP OF WINTERS



COUNTY: SACRAMENTO and YOLO

MERRITT ISLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Union Oil Company of California "Greene Unit" 2	Same as present	21 6N 4E	MD	8,000	Courtland	Winters
Deepest well	Same as above	"	"	"	"	"	Late Cretaceous

POOL DATA

ITEM	COURTLAND					FIELD OR AREA DATA
Discovery date .....	April 1966					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	6,000					
Flow pressure (psi) .....	2,600					
Bean size (in.) .....	16/64					
Initial reservoir pressure (psi) .....	3,450					
Reservoir temperature (°F) .....	136					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	980-1,300					
Formation .....	Winters					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	7,400					
Average net thickness (ft.) .....	15					
Maximum productive area (acres) .....	80					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	20-26 ***					
So <sub>i</sub> (%) .....						
Sw <sub>i</sub> (%) .....	45-50 ***					
Sg <sub>i</sub> (%) .....	50-55 ***					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.5941†					
Heating value (Btu/cu. ft.) .....	930					
Water:						
Salinity, NaCl (ppm) .....	3,100					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

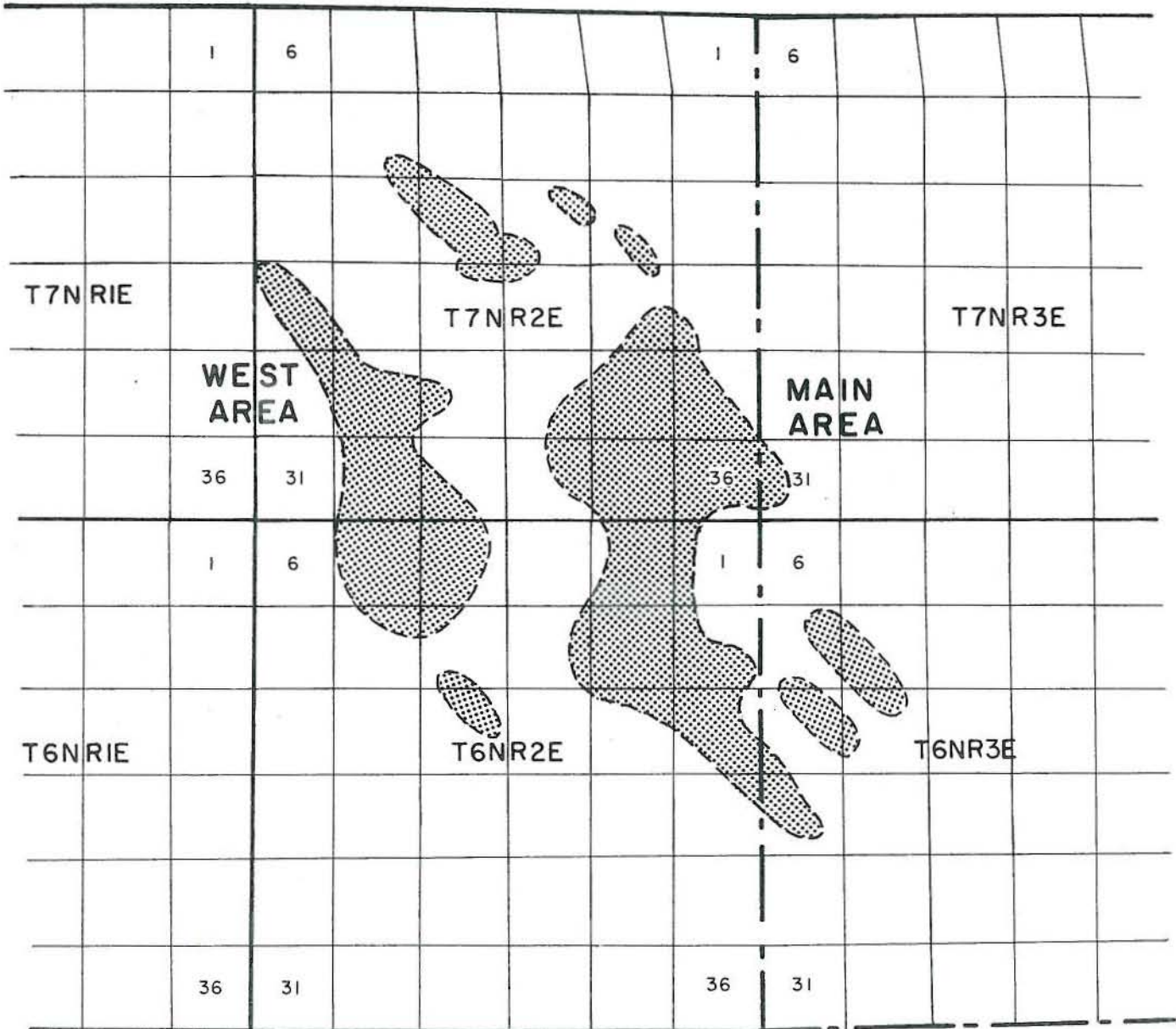
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....	388,931					
	1971					

Base of fresh water (ft.): 1,600

Remarks: Commercial gas deliveries began in June 1971. The field was abandoned in August 1974. One well was completed and cumulative production was 677,643 Mcf gas and 127 barrels condensate. During December 1980, well Anchor Petroleum Inc. "Hudson" 1 was apparently completed from the interval 7507-7510 feet (true vertical depth is 7489-7492 feet) opposite the Winters formation (Late Cretaceous).

Selected References:

MILLAR GAS FIELD  
Index Map



COUNTY: SOLANO and YOLO

MILLAR GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess Corp. "Millar" Comm." 1	Amerada Petroleum Corp. "Starkey Fee" 1	2 6N 2E	MD	9,434	Midland	
Deepest well	Hunnicuttt & Camp Drilling Co. "Anderson-Rohwer Unit" 1	Same as present	5 6N 2E	MD	9,447		Winters Late Cretaceous

POOL DATA

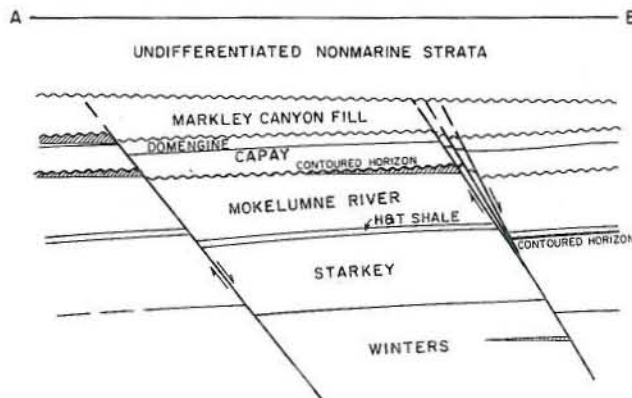
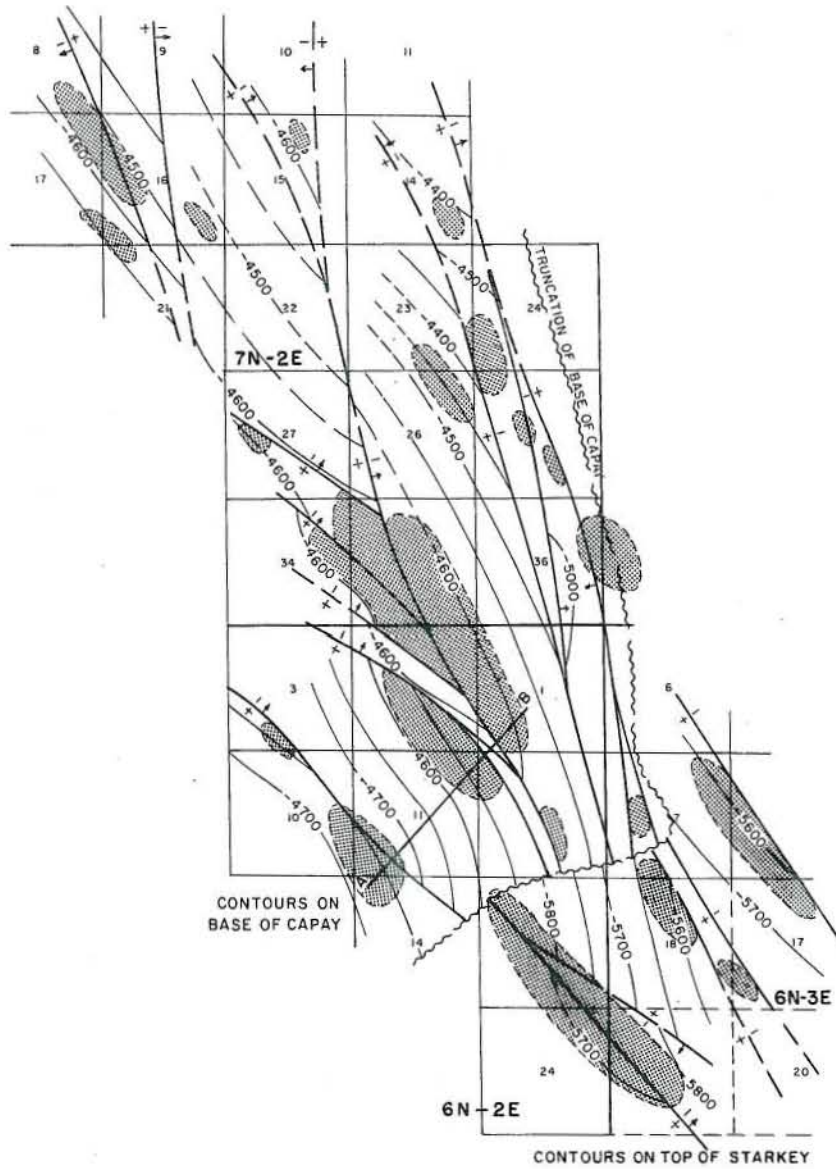
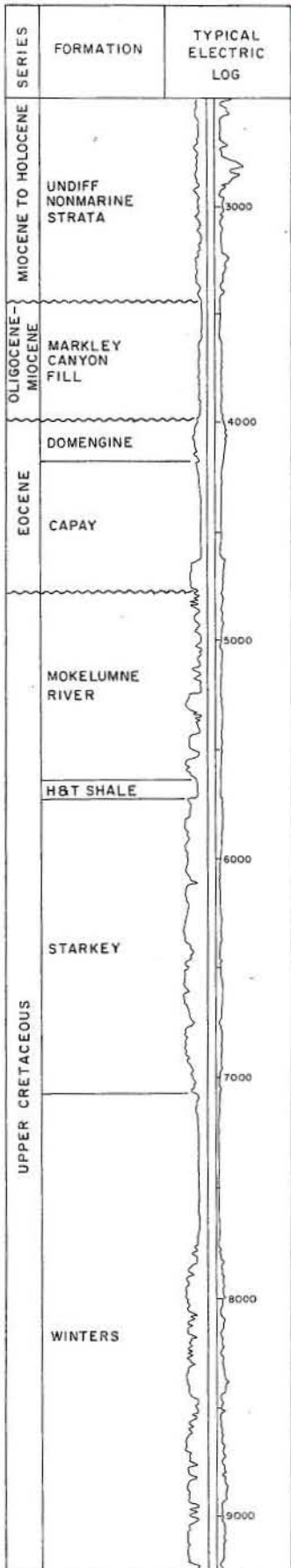
ITEM	MIDLAND					FIELD OR AREA DATA
Discovery date .....	August 1944					
Initial production rates						
Oil (bbl/day) .....	22,570					
Gas (Mcf/day) .....	1,715					
Flow pressure (psi) .....	3/8					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	2,075					
Reservoir temperature (°F) .....	106					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Mokelumne River					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	4,585					
Average net thickness (ft.) .....	40					
Maximum productive area (acres) .....	4,775					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....						
So <sub>i</sub> (%) .....						
Sw <sub>i</sub> (%) .....						
Sg <sub>i</sub> (%) .....						
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.57211					
Heating value (Btu/cu. ft.) .....	965					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	9,753,254					
Year .....	1979					

Base of fresh water (ft.):

Remarks: Millar Gas field was originally known as Dixon Gas area. Cumulative condensate production through 1979, for both areas, was 310 barrels.

Selected References:

# MILLAR GAS FIELD (Main Area)



COUNTY: SOLANO and YOLO

**MILLAR GAS FIELD  
MAIN AREA**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess Corp. "Millar Comm." 1	Amerada Petroleum Corp. "Starkey Fee" 1	2 6N 2E	MD	9,434	Midland	Winters Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

**POOL DATA**

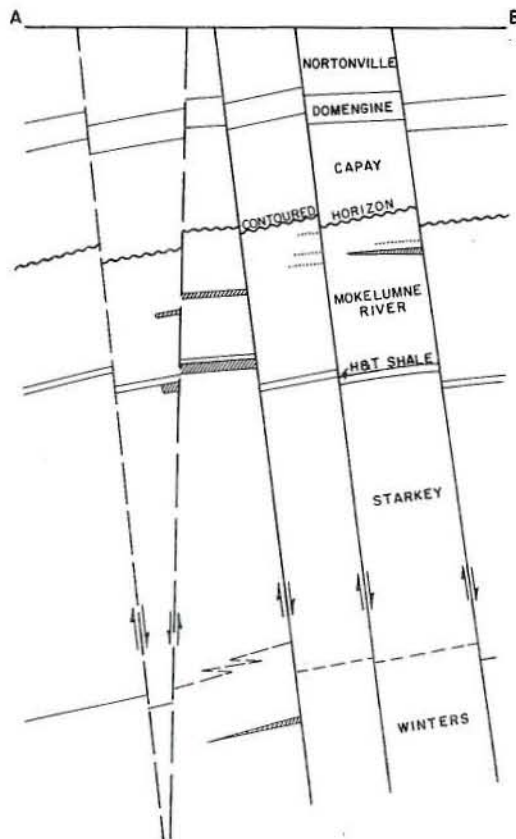
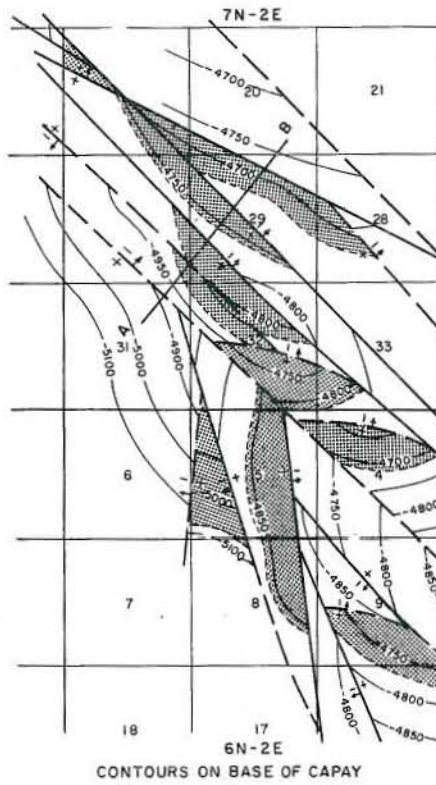
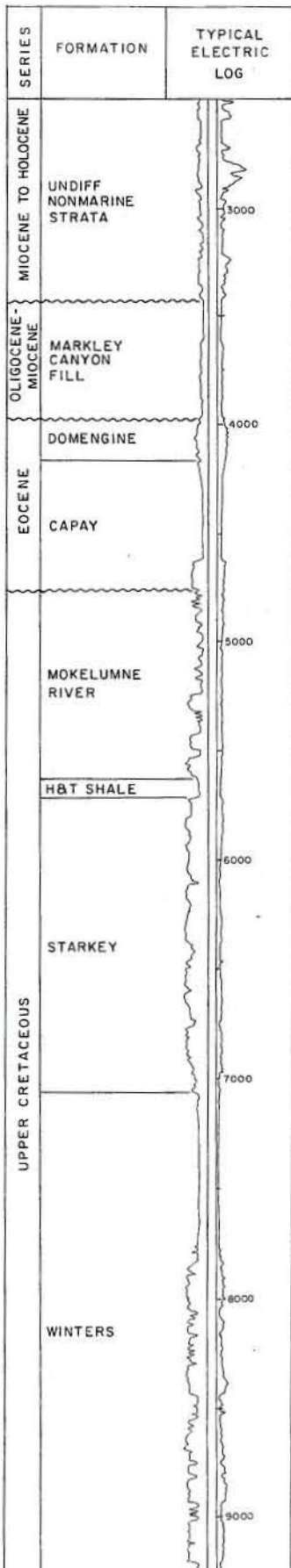
ITEM	POOL DATA					FIELD OR AREA DATA
	NORTONVILLE	DOMENGINE	MIDLAND	WINTERS	LOWER WINTERS	
Discovery date .....	September 1965	July 1960	August 1944	September 1969	April 1971	
Initial production rates						
Oil (bbl/day) .....		240	22,570	4,000	510	
Gas (Mcf/day) .....	2,350 <sup>a/</sup>					
Flow pressure (psi) .....	1,560	1,075	1,715	3,060	1,160	
Bean size (in.) .....	1/4	1/4	3/8	17/64	5/16	
Initial reservoir pressure (psi) .....	1,520	1,780	2,075	3,400-3,705	3,795	
Reservoir temperature (°F) .....	109	108	114	107-111	151	
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....		760-970	990-1,300	870-1,400	800-1,400	
Formation .....	Nortonville	Domengine	Mokelumne River	Winters	Winters	
Geologic age .....	Eocene	Eocene	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	3,875	4,000	4,585	7,070-7,970	8,245	
Average net thickness (ft.) .....	5	20	50	35	14	
Maximum productive area (acres) .....						3,525
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....		22-26***	25-29	18-25†	18-25†	
So <sub>2</sub> (%) .....						
Sw <sub>i</sub> (%) .....		40-45***	35-40	45-55†	45-55†	
Sg <sub>g</sub> (%) .....		60-65***	60-65	45-55†	45-55†	
Permeability to air (md) .....			3-64			
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	-	.560††	.572††	.620††	.630††	
Heating value (Btu/cu. ft.) .....	-	990	965	850	825	
Water:						
Salinity, NaCl (ppm) .....	-	3,600	6,850	10,440	-	
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						6,091,653 1979

Base of fresh water (ft.): 2,900-3,200

Remarks: Cumulative condensate production through 1979 was 188 barrels.  
<sup>a/</sup> Commingled production from Domengine and Nortonville zones.

Selected References:

# MILLAR GAS FIELD (West Area)



COUNTY: SOLANO and YOLO

**MILLAR GAS FIELD  
WEST AREA**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess Corp., Opr. "Campbell Ranch" 1	The Termo Co. "Amerada-Campbell" 1	4 6N 2E	MD	6,200	Campbell Ranch	
Deepest well	Hunnicuttt & Campbell Drilling Co. "Anderson-Rohwer Unit" 1	Same as present	5 6N 2E	MD	9,447		Winters Late Cretaceous

**POOL DATA**

ITEM	CAMPBELL RANCH	BUNKER	STARKEY	WINTERS	FIELD OR AREA DATA
Discovery date .....	October 1967	November 1972	October 1972	January 1973	
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	2,900	7,970	9,160	10,000	
Flow pressure (psi) .....	1,930	1,600	1,830	1,500	
Bean size (in.) .....	14/64	7/16	7/16		
Initial reservoir pressure (psi) .....	2,340	2,400	2,555	2,960	
Reservoir temperature (°F) .....	115	115	119	142	
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	860-1,400	970-1,400	1,100-1,600	870-1,500	
Formation .....	Mokelumne River	Mokelumne River	Starkey	Winters	
Geologic age .....	Late Cretaceous	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	5,290	5,350	5,665	7,840	
Average net thickness (ft.) .....	40	65	75	15	
Maximum productive area (acres) .....					1,570
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	21-28***	23-28	25-30 †	18-25 †	
So <sub>2</sub> (%) .....					
Sw <sub>2</sub> (%) .....	35-45***	35-45	35-45 †	45-55 †	
Sg <sub>1</sub> (%) .....	55-65***	55-65	55-65 †	45-55 †	
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.570 ††	.575 ††	.570 ††	.631	
Heating value (Btu/cu. ft.) .....	980	960	980	967	
Water:					
Salinity, NaCl (ppm) .....	1,700	-	-	-	
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					4,741,398 1972

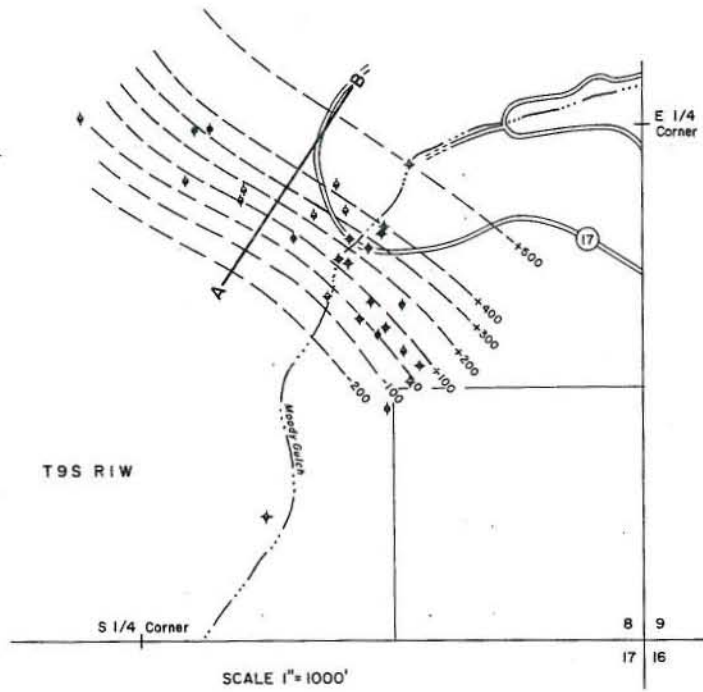
Base of fresh water (ft.): 2,900

Remarks: Commercial gas deliveries began in August 1968. Cumulative condensate production through 1979 was 128 barrels.

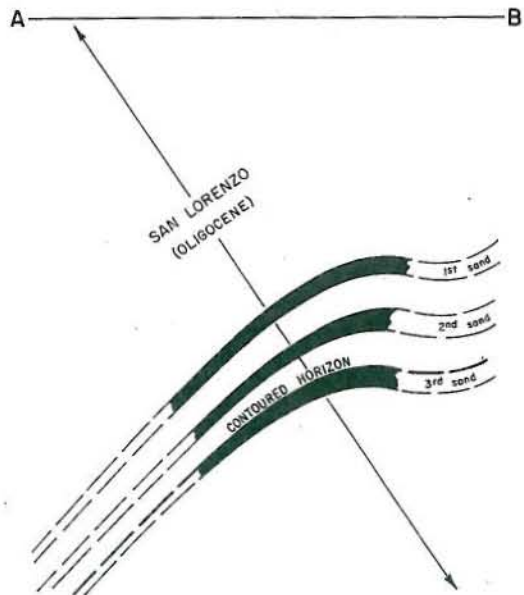
Selected References:



# MOODY GULCH OIL FIELD



CONTOURS ON TOP OF 3<sup>rd</sup> SAND



COUNTY: SANTA CLARA

MOODY GULCH OIL FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Division of Highways Well No. 3	Santa Clara Petroleum Co. "Moody" 1	8 9S 1W	MD	800	San Lorenzo	
Deepest well	Division of Highways Well No. 2	Continental Oil & Mineral Co. No. 1	8 9S 1W	MD	2,230		San Lorenzo Oligocene

POOL DATA

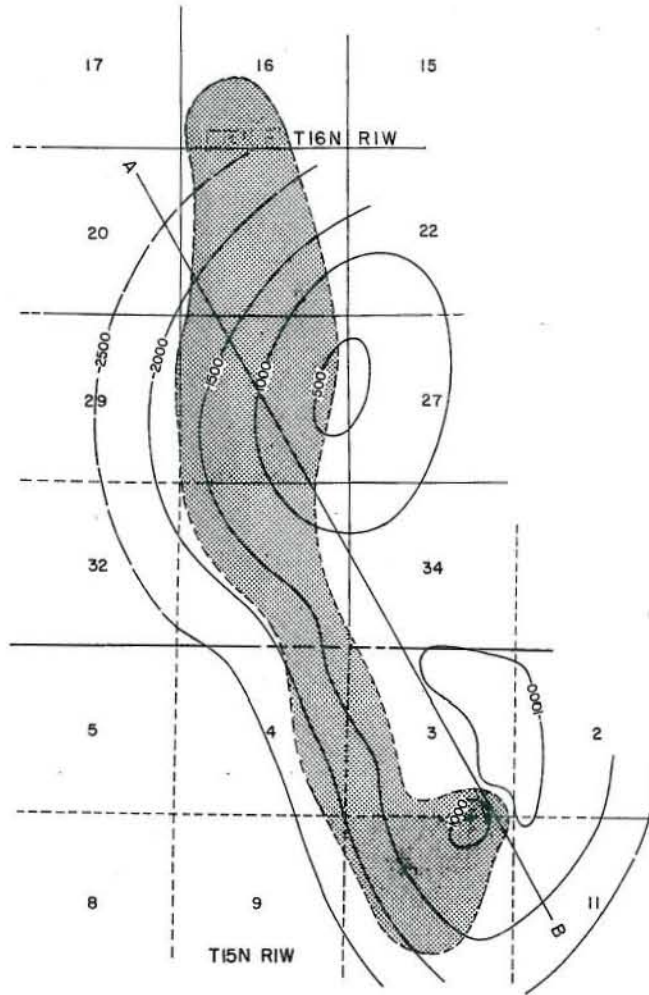
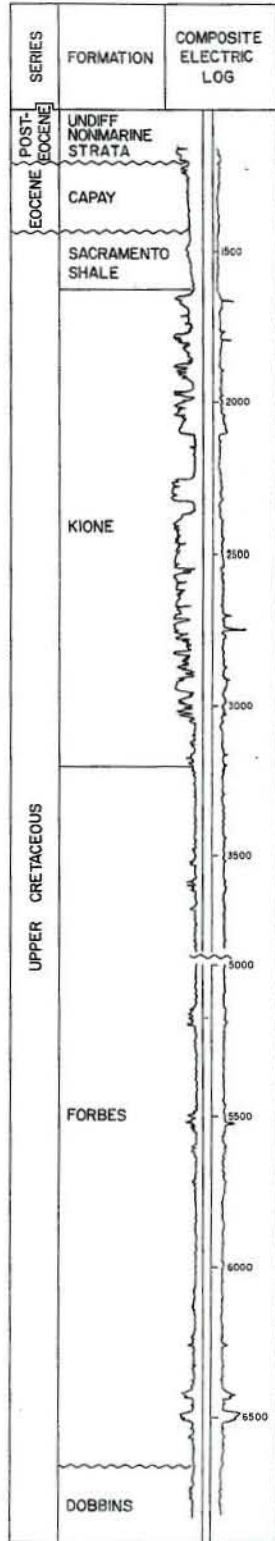
ITEM	SAN LORENZO					FIELD OR AREA DATA
Discovery date .....	1878					
Initial production rates						
Oil (bbl/day) .....	20-40					
Gas (Mcf/day) .....						
Flow pressure (psi) .....						
Bean size (in.) .....						
Initial reservoir pressure (psi) .....						
Reservoir temperature (°F) .....						
Initial oil content (STB/ac-ft.) .....						
Initial gas content (MSCF/ac-ft.) .....						
Formation .....	San Lorenzo					
Geologic age .....	Oligocene					
Average depth (ft.) .....	330-930					
Average net thickness (ft.) .....	20-35					
Maximum productive area (acres) .....	40					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....						
S <sub>oi</sub> (%) .....						
S <sub>wi</sub> (%) .....						
S <sub>gi</sub> (%) .....						
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....	45					
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....						
Heating value (Btu/cu. ft.) .....						
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl) .....	Prior to 1886					
Year .....						
Peak gas production, net (Mcf) .....						
Year .....						

Base of fresh water (ft.): 35

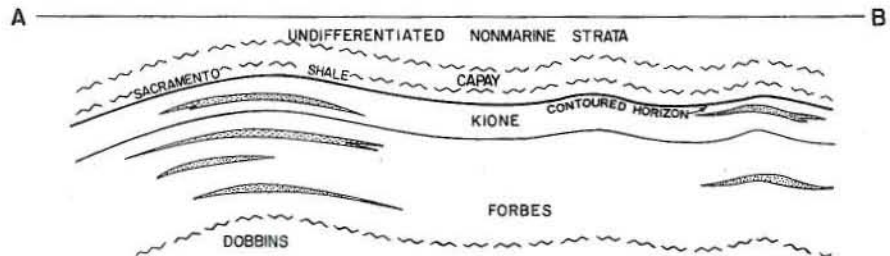
Remarks: Water production is minor and probably fresh. The last oil production was in 1960.

**Selected References:** Calif. State Mining Bureau, 1884, Fourth Annual Report of the State Minerologist, p. 302.  
 Calif. State Mining Bureau, 1887, Seventh Annual Report of the State Minerologist, p. 93-96.  
 Calif. State Mining Bureau, 1914, Bull. 69, p. 469-470.  
 Davis, F. F., 1954, Mines and Mineral Resources of Santa Clara County, Calif.: (Calif. Div. of Mines, Calif. Journal of Mines and Geology, Vol. 50, No. 2, p. 385-388.  
 Krueger, M. L., 1943, Moody Gulch Oil Field: Calif. Div. of Mines Bull. 118, p. 77, 79, and 477.  
 Vander, Leck L., 1921, Petroleum Resources of California: Calif. State Mining Bureau Bull. 89, p. 64-65.

# MOON BEND GAS FIELD



CONTOURS ON TOP OF KIONE



COUNTY: COLUSA

MOON BEND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Great Basins Petroleum Co. "Steidlmayer" 3	Humble Oil & Refg. Co. "Steidlmayer" 3	3 15N 1W	MD	2,093	Kione	
Deepest well	Great Basins Petroleum Co. "Great Basins-Davis" 1-9	Colorado Oil & Gas Corp. "Great Basins-Davis" 1-9	9 15N 1W	MD	7,979		Forbes Late Cretaceous

POOL DATA

ITEM	KIONE	FORBES	FIELD OR AREA DATA			
Discovery date .....	October 1954	October 1966				
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,700	514				
Flow pressure (psi) .....	390	1,710				
Bean size (in.) .....	24/64	1/8				
Initial reservoir pressure (psi) .....	640	2,600-4,350				
Reservoir temperature (°F) .....	95	105-145				
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	310-440	1,300-1,700				
Formation .....	Kione	Forbes				
Geologic age .....	Late Cretaceous	Late Cretaceous				
Average depth (ft.) .....	1,400	2,270-6,850				
Average net thickness (ft.) .....	27	2-70				
Maximum productive area (acres) .....						1,570

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	25-33***	24-30				
So <sub>2</sub> (%) .....						
Sw <sub>i</sub> (%) .....	30-35***	35-40				
Sg <sub>g</sub> (%) .....	65-70***	60-65				
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.570	.603				
Heating value (Btu/cu. ft.) .....	990	910				
Water:						
Salinity, NaCl (ppm) .....	-	14,000-19,000				
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

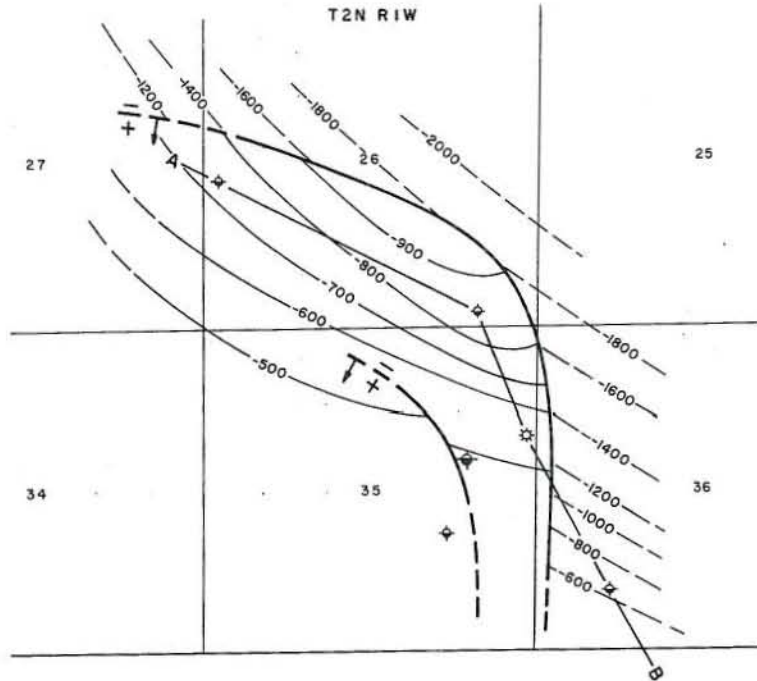
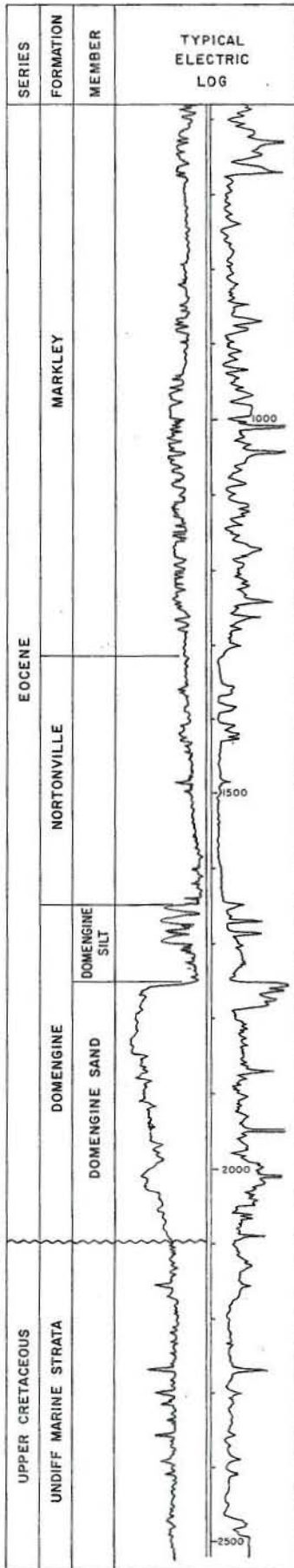
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbi) Year .....						
Peak gas production, net (Mcf) Year .....						6,445,191 1975

Base of fresh water (ft.): 200-1,300

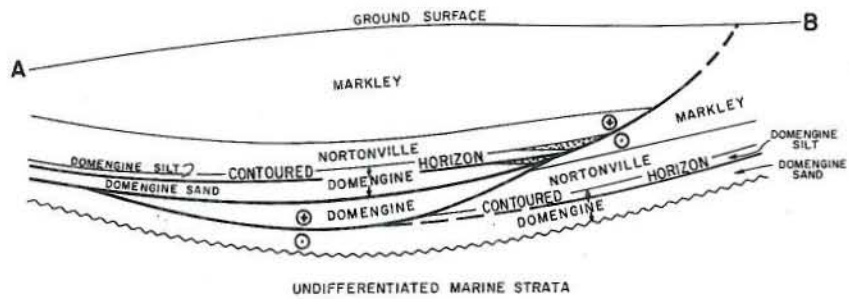
Remarks: Commercial gas deliveries began in March 1968.

Selected References:

# MULLIGAN HILL GAS FIELD (Abandoned)



CONTOURS ON TOP OF DOMENGINE SAND



COUNTY: CONTRA COSTA

MULLIGAN HILL GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Occidental Petroleum Corp. "Keller Estate" 1	Same as present	35 2N 1W	MD	4,965	Domengine	G-zone Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	POOL DATA					FIELD OR AREA DATA
	DOMENGINE <sup>a/</sup>					
Discovery date .....	November 1961					
Initial production rates						
Oil (bbl/day) .....	1,040					
Gas (Mcf/day) .....	300					
Flow pressure (psi) .....	1/2					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	490					
Reservoir temperature (°F) .....	87					
Initial oil content (STB/ac.-ft.) .....	240-330					
Initial gas content (MSCF/ac.-ft.) .....	Domengine					
Formation .....	Eocene					
Geologic age .....	1,640-1,735					
Average depth (ft.) .....	5-30					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	40					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	25-30***					
So <sub>i</sub> (%) .....						
Sw <sub>i</sub> (%) .....	25-35***					
Sg <sub>i</sub> (%) .....	65-75***					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.572††					
Heating value (Btu/cu. ft.) .....	985					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....	45,183 1967					

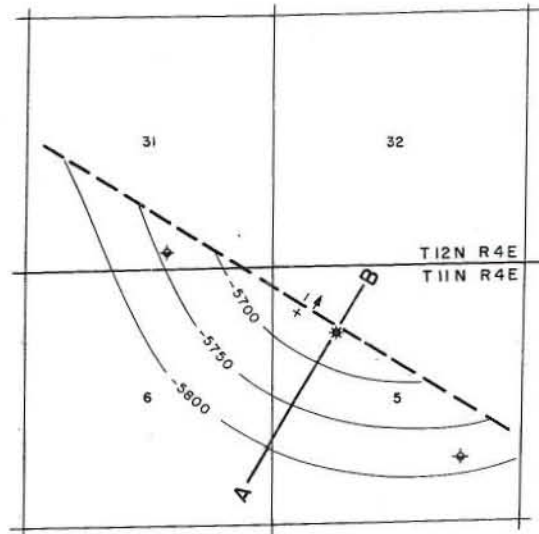
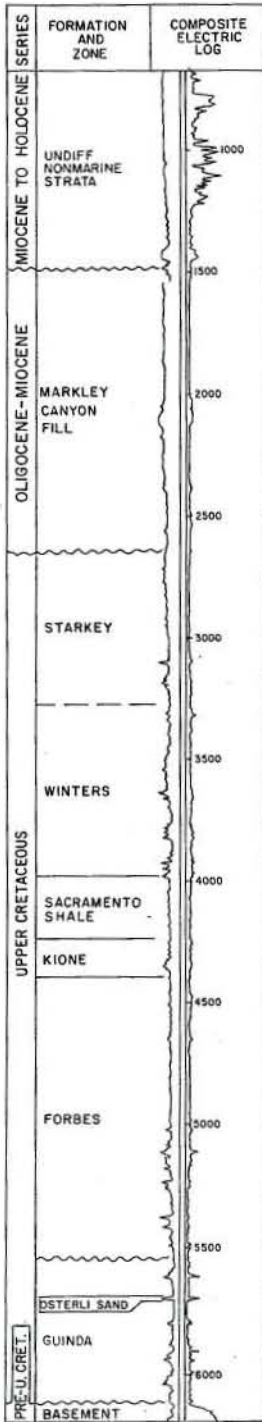
Base of fresh water (ft.): Above 500

Remarks: Commercial gas deliveries began in January 1963. The field was abandoned in October 1968. One well was completed and cumulative gas production was 125,576 Mcf.

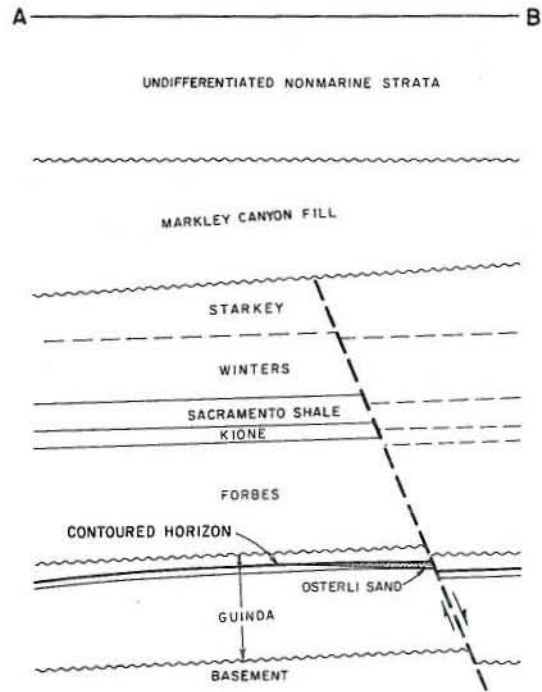
<sup>a/</sup> Commingled production from Domengine silt and Domengine sand.

Selected References:

# NICOLAUS GAS FIELD



CONTOURS ON TOP OF OSTERLI SAND



COUNTY: SUTTER

NICOLAUS GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Delcalta International Corp. "Osterli" 1	Sacramento Oil and Gas Co. "Osterli" 1	5 11N 4E	MD	5,762	Osterli	
Deepest well	Delcalta International Corp. "Osterli" 3	Bolsa Chica Oil Corp. "Osterli" 1	31 12N 4E	MD	6,786		basement pre-Lt. Cret.

POOL DATA

ITEM	OSTERLI					FIELD OR AREA DATA
Discovery date .....	July 1961					
Initial production rates						
Oil (bbl/day) .....	5,200					
Gas (Mcf/day) .....	355					
Flow pressure (psi) .....	3/4					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	2,525					
Reservoir temperature (°F) .....	115					
Initial oil content (STB/ac.-ft.) .....	570-710					
Initial gas content (MSCF/ac.-ft.) .....	Guinda					
Formation .....	Late Cretaceous					
Geologic age .....	5,700					
Average depth (ft.) .....	15					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	160					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	16-18**					
S <sub>oi</sub> (%) .....	45-50**					
S <sub>wi</sub> (%) .....	50-55**					
S <sub>gi</sub> (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.8751†					
Heating value (Btu/cu. ft.) .....	220					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

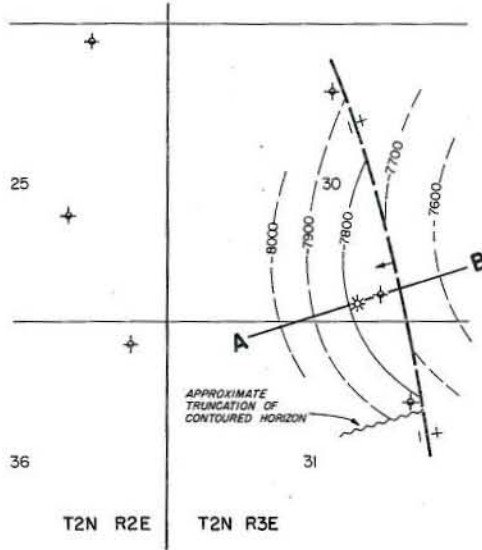
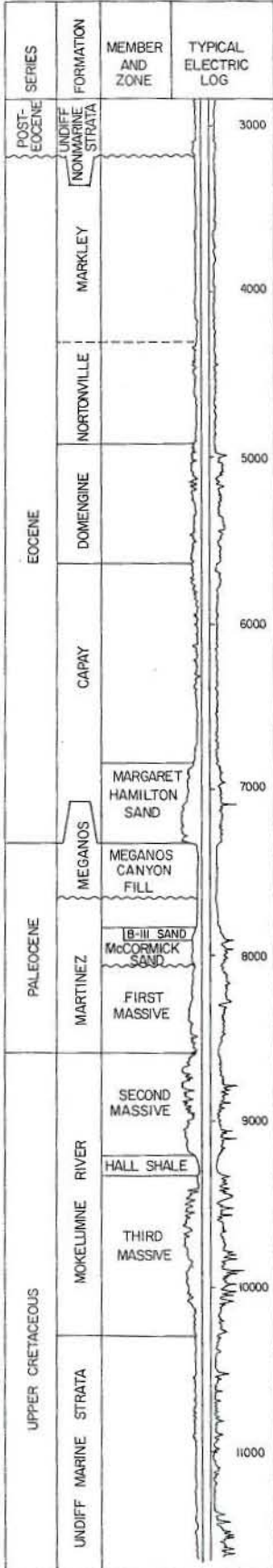
Base of fresh water (ft.): 2,500

Remarks: Gas is 78 percent nitrogen and 22 percent methane. Field has never produced commercially, and the only completed well is shut in.

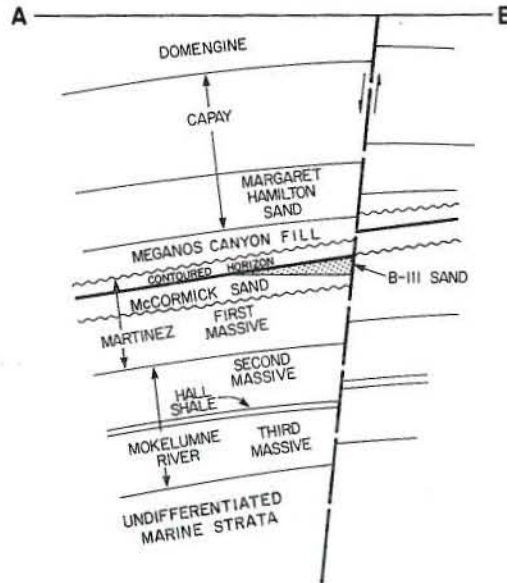
Selected References:



# OAKLEY GAS FIELD (Abandoned)



CONTOURS ON TOP OF McCORMICK SAND



COUNTY: CONTRA COSTA

OAKLEY GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Occidental Petroleum Corp. "Machado" 1	Same as present	50 2N 3E	MD	11,607	B-III	undiff. marine Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

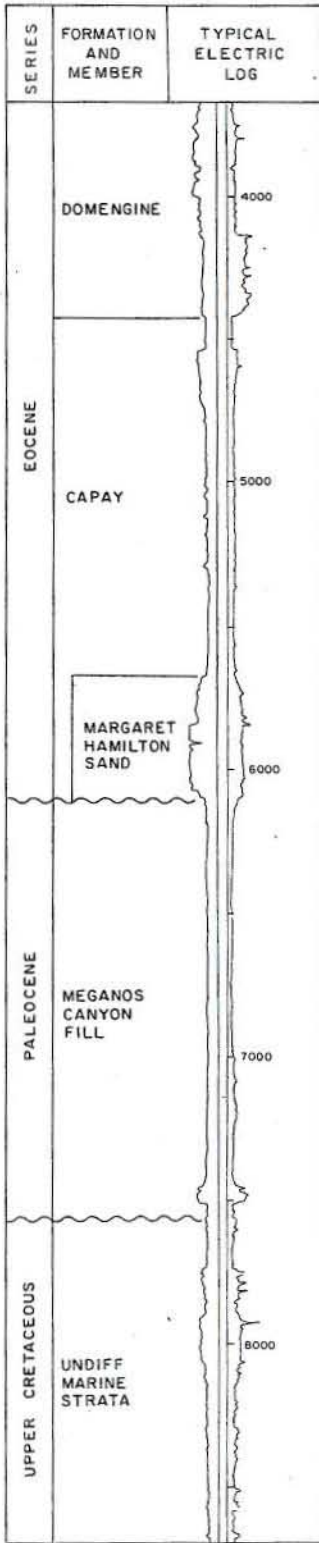
ITEM	POOL DATA					FIELD OR AREA DATA
	B-III					
Discovery date .....	September 1962					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	3,162					
Flow pressure (psi) .....	1,226					
Bean size (in.) .....	5/8					
Initial reservoir pressure (psi) .....	3,080					
Reservoir temperature (°F) .....	166					
Initial oil content (STB/ac-ft.) .....	1,100-1,300					
Initial gas content (MSCF/ac-ft.) .....	Martinez					
Formation .....	Paleocene					
Geologic age .....	7,822					
Average depth (ft.) .....	60					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	120					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	24-26					
So <sub>g</sub> (%) .....	40-45					
Sw <sub>i</sub> (%) .....	55-60					
Sg <sub>i</sub> (%) .....						
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.591††					
Heating value (Btu/cu. ft.) .....	1,060					
Water:						
Salinity, NaCl (ppm) .....	7,000					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	15,108					
Year .....	1967					

Base of fresh water (ft.): Above 800

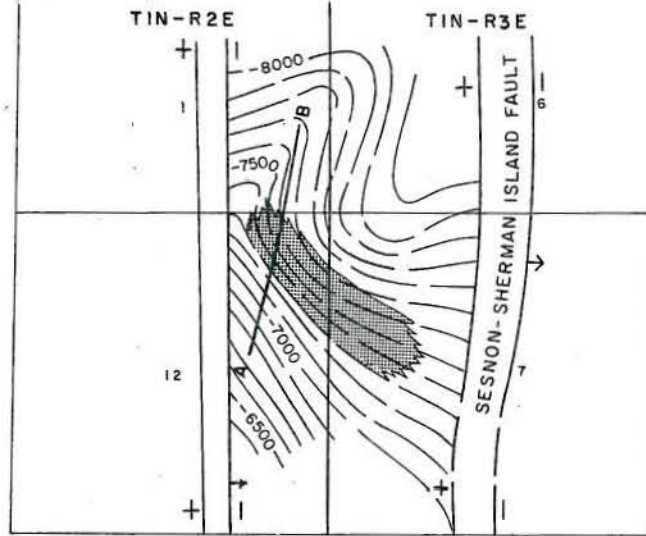
Remarks: Commercial gas deliveries began in January 1967. The field was abandoned in April 1968. Only one well was completed and cumulative gas production was 15,108 Mcf.

Selected References:

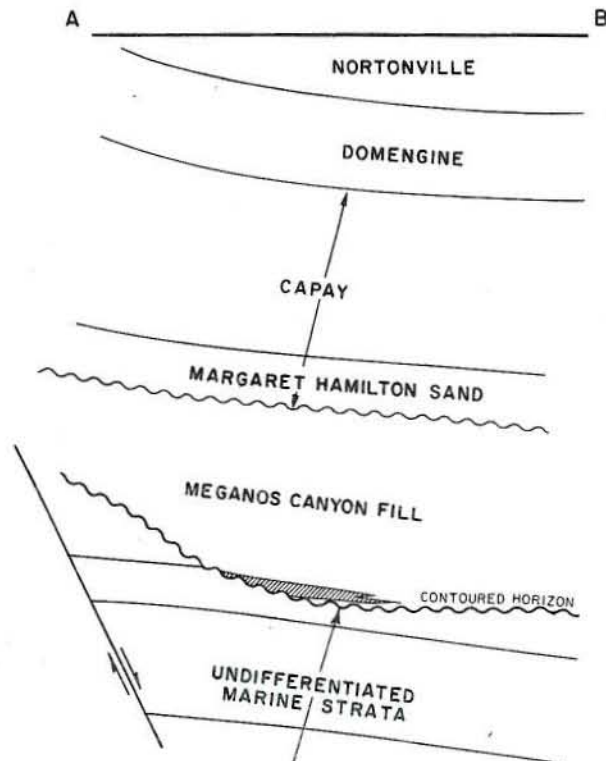
# SOUTH OAKLEY GAS FIELD



DECEMBER 1980



CONTOURS ON BASE OF MEGANOS CANYON FILL



COUNTY: CONTRA COSTA

OAKLEY, SOUTH, GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Conoco Inc. "Marsh Creek Unit" 1	Continental Oil Co. "Marsh Creek Unit" 1	12 1N 2E	MD	8,692	Meganos Canyon fill	Moreno Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

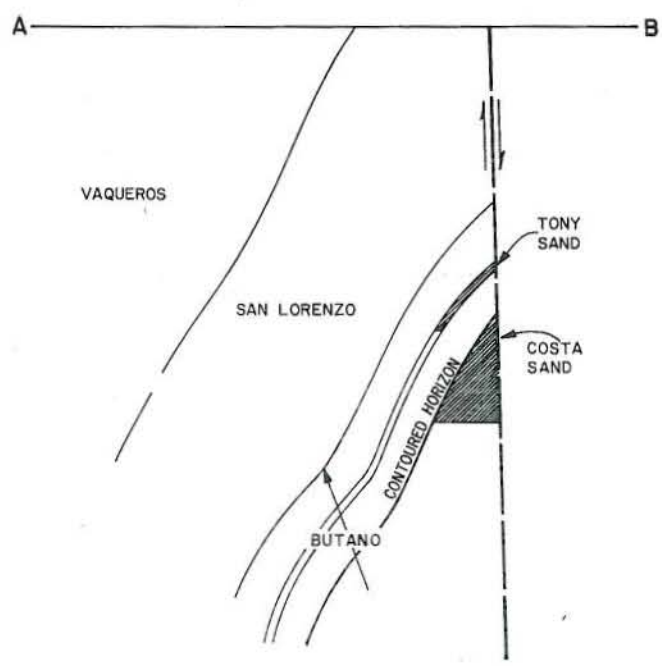
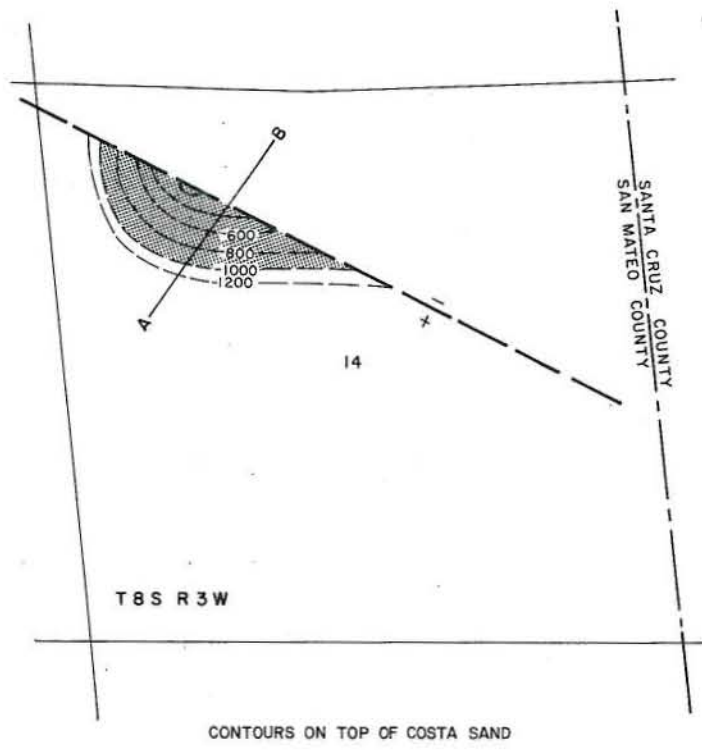
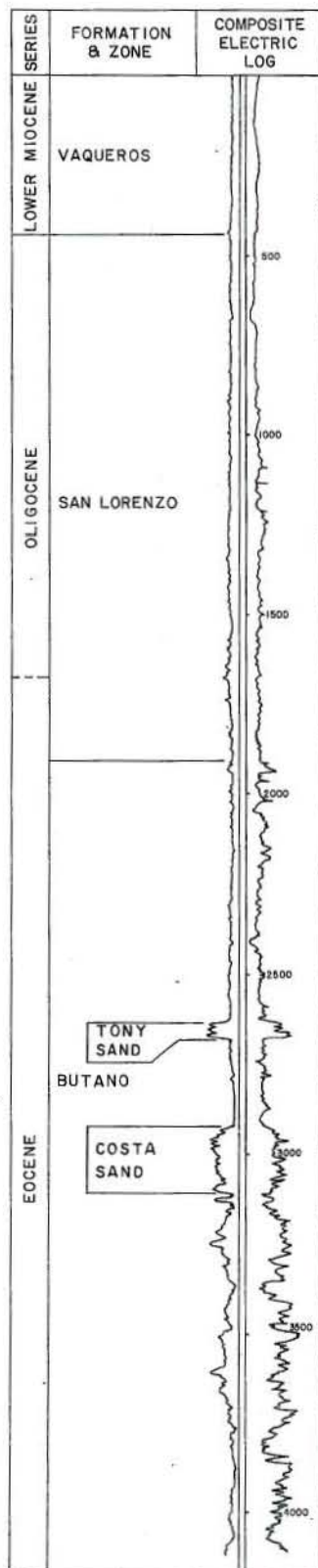
ITEM	MEGANOS CANYON FILL					FIELD OR AREA DATA
Discovery date .....	November 1972					
Initial production rates						
Oil (bbl/day) .....	500-1,000					
Gas (Mcf/day) .....	2,930					
Flow pressure (psi) .....						
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	2,819					
Reservoir temperature (°F) .....	167					
Initial oil content (STB/ac.-ft.) .....	920					
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Meganos Canyon fill					
Geologic age .....	Paleocene					
Average depth (ft.) .....	7,475					
Average net thickness (ft.) .....	50					
Maximum productive area (acres) .....	300					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	18					
So <sub>g</sub> (%) .....	35					
Sw <sub>i</sub> (%) .....	65					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.603					
Heating value (Btu/cu. ft.) .....	1,062					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	1,692,871					
Year .....	1976					

Base of fresh water (ft.): Above 100

Remarks: Commercial gas deliveries began in January 1974. Condensate production in 1979 was 2,762 bbl; cumulative condensate production 12,837 bbl.

Selected References:

# OIL CREEK OIL FIELD



COUNTY: SAN MATEO

OIL CREEK OIL FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Costa Loma Ltd. "Costa" 1	Union Oil Company of California "Richfield-Costa" 1	14 8S 3W	MD	3,804	Costa	
Deepest well	Union Oil Company of California "Richfield-Costa" 4	Same as present	14 8S 3W	MD	5,112		Butano Eocene

POOL DATA

ITEM	POOL DATA		FIELD OR AREA DATA
	TONY	COSTA	
Discovery date .....	March 1956	October 1955	
Initial production rates			
Oil (bbl/day) .....	24 <sup>a/</sup>	107	
Gas (Mcf/day) .....	474	42	
Flow pressure (psi) .....	135	25	
Bean size (in.) .....		14/64	
Initial reservoir pressure (psi) .....		769	
Reservoir temperature (°F) .....	99	101	
Initial oil content (STB/ac.-ft.) .....		580-1,000	
Initial gas content (MSCF/ac.-ft.) .....			
Formation .....	Butano	Butano	
Geologic age .....	Eocene	Eocene	
Average depth (ft.) .....	1,860	2,090	
Average net thickness (ft.) .....	55	120	
Maximum productive area (acres) .....			80

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	15-23	15-23	
Soj (%) .....	60-70	60-70	
Swj (%) .....	30-40	30-40	
Sgi (%) .....			
Permeability to air (md) .....		30-140	

RESERVOIR FLUID PROPERTIES

Oil:			
Oil gravity (°API) .....	41	41	
Sulfur content (% by wt.) .....			
Initial solution GOR (SCF/STB) .....	<sup>a/</sup>	392	
Initial oil FVF (RB/STB) .....		1.2	
Bubble point press. (psia) .....			
Viscosity (cp) @ °F .....			
Gas:			
Specific gravity (air = 1.0) .....			
Heating value (Btu/cu. ft.) .....			
Water:			
Salinity, NaCl (ppm) .....	25,300	25,300	
T.D.S. (ppm) .....			
R <sub>w</sub> (ohm/m) (77°F) .....			

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....			
Date started .....			
Date discontinued .....			

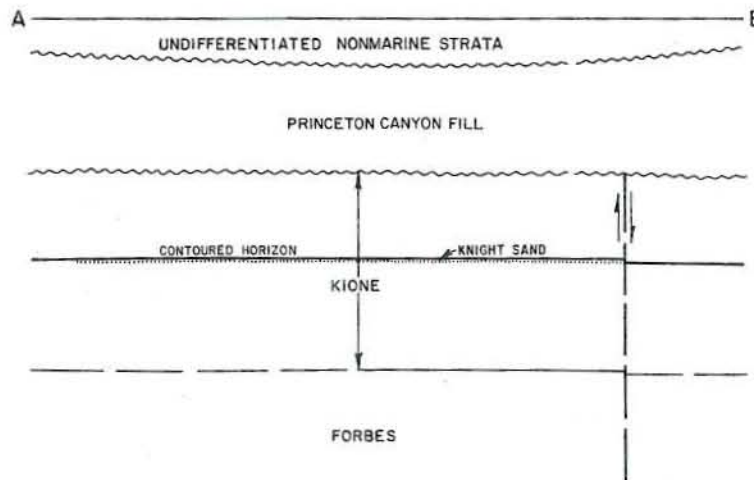
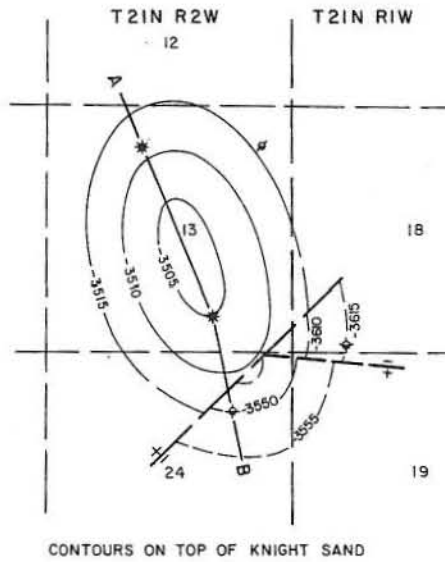
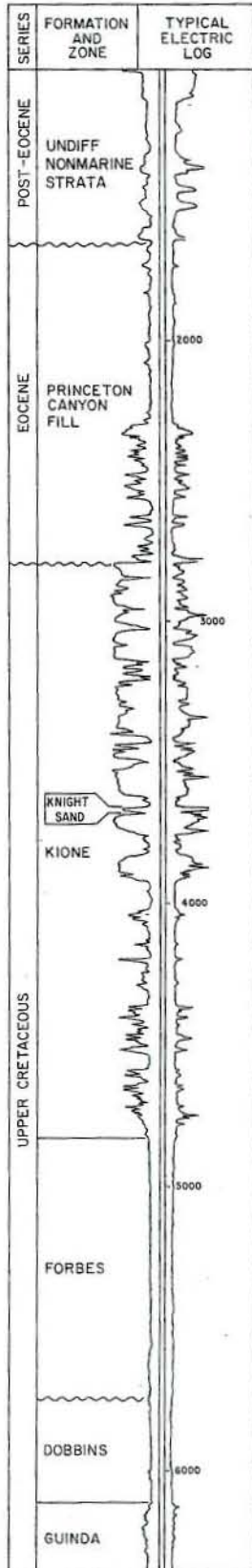
Peak oil production (bbl)			15,058
Year .....			1976
Peak gas production, net (Mcf)			
Year .....			

Base of fresh water (ft.): None

Remarks: Commercial oil production began in October 1955.  
<sup>a/</sup> Commingled with production from Costa zone.

Selected References: Fothergill, H. L., 1962, La Honda Oil Field, Calif. in Geologic Guide to the Gas and Oil Fields of Northern Calif.: Div. of Mines and Geology Bull. 181, p. 223-224.

# ORD BEND GAS FIELD



COUNTY: GLENN

ORD BEND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	The Superior Oil Co. "Knight" 1	Same as present	13 21N 2W	MD	6,346	Knight	Guinda Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	KNIGHT				FIELD OR AREA DATA
Discovery date .....	August 1943				
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	5,040				
Flow pressure (psi) .....	1,075				
Bean size (in.) .....	24/64				
Initial reservoir pressure (psi) .....	1,615				
Reservoir temperature (°F) .....	112				
Initial oil content (STB/ac.-ft.) .....	880-1,200				
Initial gas content (MSCF/ac.-ft.) .....	Kione				
Formation .....	Late Cretaceous				
Geologic age .....					
Average depth (ft.) .....	3,660				
Average net thickness (ft.) .....	13				
Maximum productive area (acres) .....	300				
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	26-32***				
So <sub>i</sub> (%) .....	30-35***				
Sw <sub>i</sub> (%) .....	65-70***				
Sg <sub>i</sub> (%) .....					
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.600				
Heating value (Btu/cu. ft.) .....	910				
Water:					
Salinity, NaCl (ppm) .....	15,400				
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)	1,034,566				
Year .....	1947				

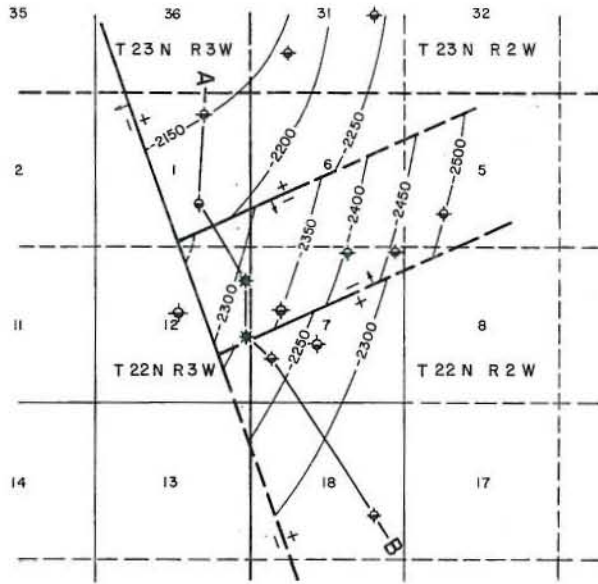
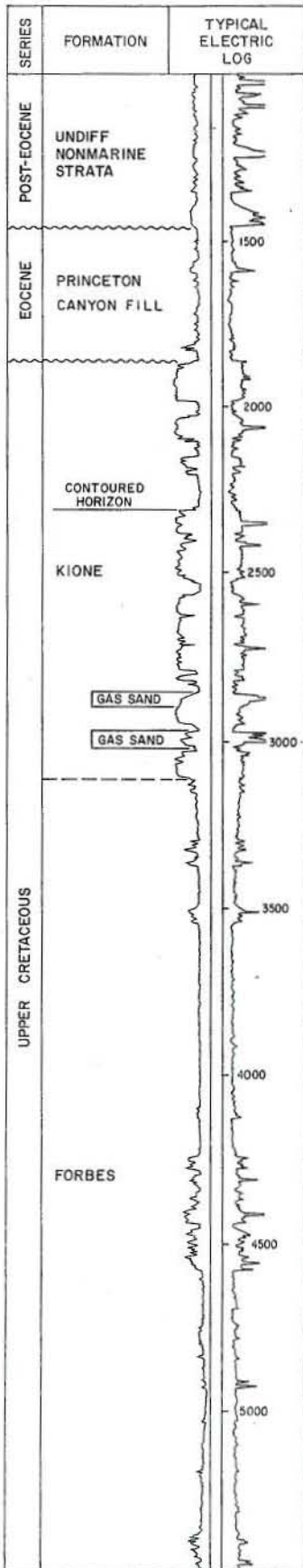
Base of fresh water (ft.): 1,200

Remarks: Commercial gas deliveries began in January 1945.

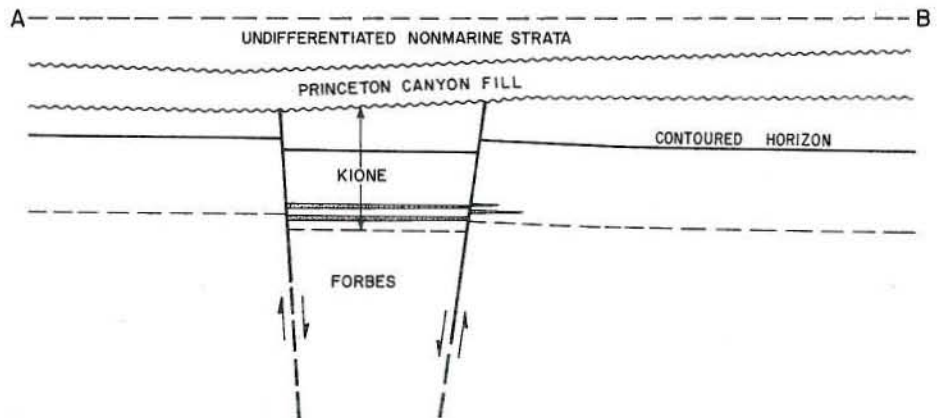
Selected References:



# ORLAND GAS FIELD



CONTOURS ON KIONE MARKER



COUNTY: GLENN

ORLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Armstrong Petroleum Corp. "Morrissey" 1-12	Oxy Petroleum, Inc. "Morrissey" 1-12	12 22N 3W	MD	5,711	unnamed	
Deepest well	Ferguson & Bosworth and Assoc. "Transamerica Dev. Co." 1	Same as present	7 22N 2W	MD	5,850		Forbes Late Cretaceous

POOL DATA

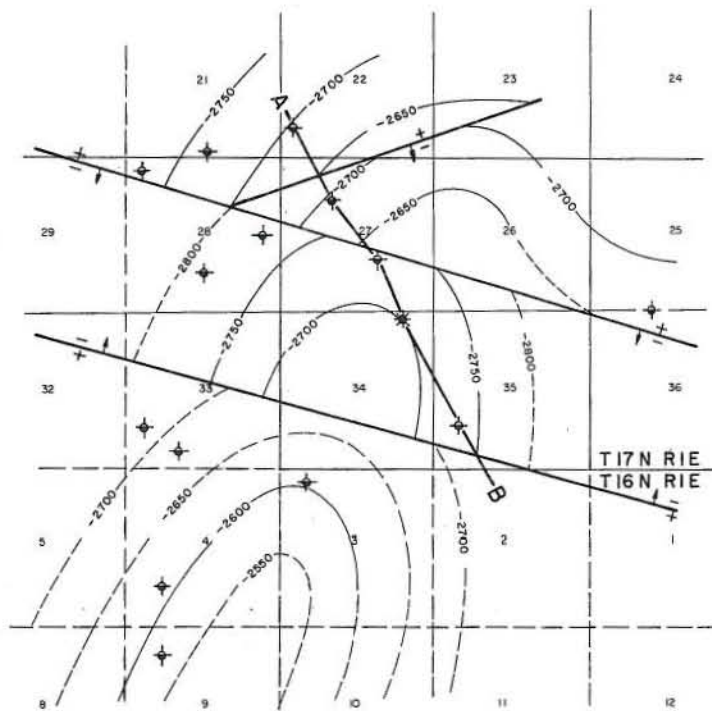
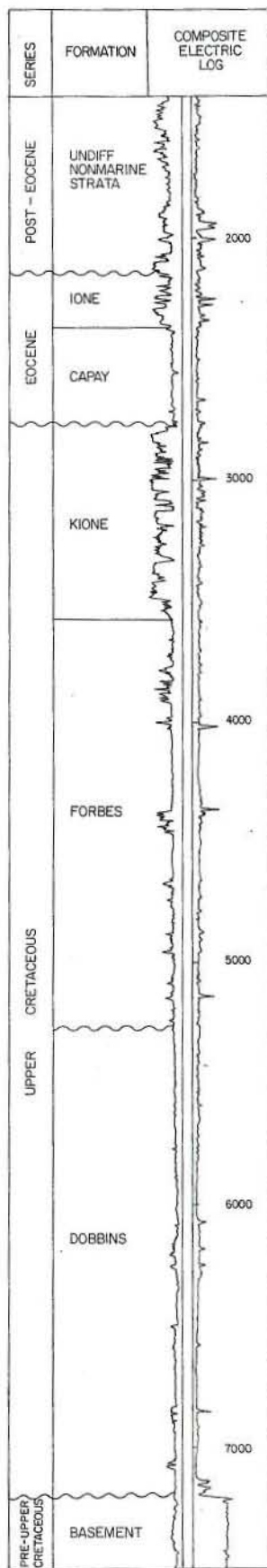
ITEM	UNNAMED					FIELD OR AREA DATA
Discovery date .....	May 1975					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,160-1,300					
Flow pressure (psi) .....	1,150-1,260					
Bean size (in.) .....	16/64					
Initial reservoir pressure (psi) .....	1,350-1,400					
Reservoir temperature (°F) .....	101-107					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	740-760					
Formation .....	Kione					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	2,710-3,220					
Average net thickness (ft.) .....	10-20					
Maximum productive area (acres) .....	100					
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	25-27***					
So <sub>g</sub> (%) .....	33*					
Sw <sub>i</sub> (%) .....	67*					
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.568-.591					
Heating value (Btu/cu. ft.) .....	925-981					
Water:						
Salinity, NaCl (ppm) .....	84,000					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	95,454					
Year .....	1979					

Base of fresh water (ft.): 1,700

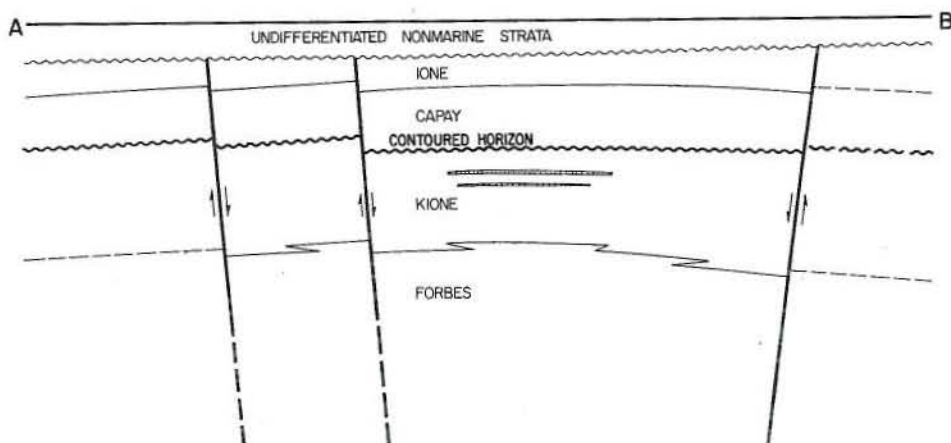
Remarks: Commercial gas deliveries began in January 1979.

Selected References:

# PEACE VALLEY GAS FIELD



CONTOURS ON TOP OF KIONE



COUNTY: SUTTER

PEACE VALLEY GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "Buttes Community" 1-34	Same as present	34 17N 1E	MD	6,798	Kione	
Deepest well	Shell Oil Co. "Citco-DeRee" 1-35	Same as present	35 17N 1E	MD	7,236 <sup>a/</sup>		basement pre-Lt. Cret.

POOL DATA

ITEM	KIONE					FIELD OR AREA DATA
Discovery date .....	July 1977					
Initial production rates						
Oil (bbl/day) .....	5,200					
Gas (Mcf/day) .....						
Flow pressure (psi) .....						
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,395					
Reservoir temperature (°F) .....	110					
Initial oil content (STB/ac.-ft.) .....	800					
Initial gas content (MSCF/ac.-ft.) .....	Kione					
Formation .....	Late Cretaceous					
Geologic age .....						
Average depth (ft.) .....	3,150					
Average net thickness (ft.) .....	30					
Maximum productive area (acres) .....	40					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	28*					
Soj (%) .....	30*					
Swj (%) .....	70*					
Sgj (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.650					
Heating value (Btu/cu. ft.) .....	780					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

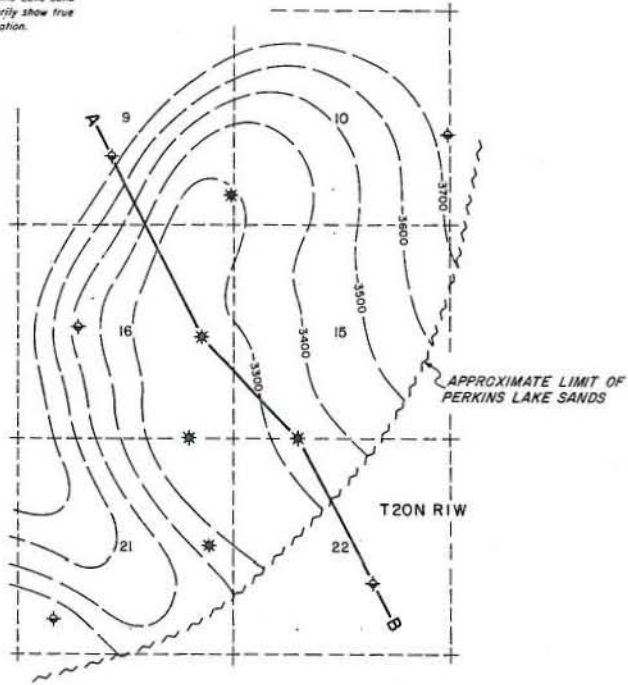
Base of fresh water (ft.): 750

Remarks: Commercial gas deliveries have not yet begun.  
<sup>a/</sup> Directional well, true vertical depth is 7,236 feet.

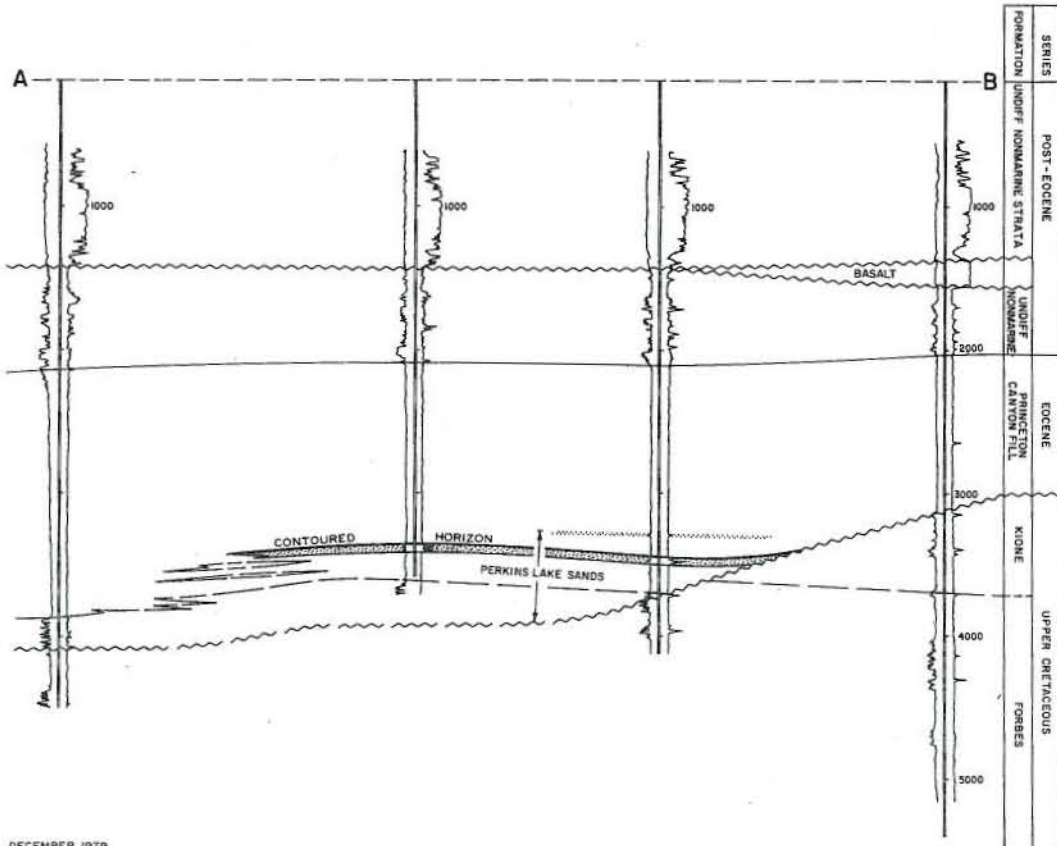
Selected References:

# PERKINS LAKE GAS FIELD

NOTE: Contours are an first significant occurrence of Perkins Lake sand and do not necessarily show true structural configuration.



CONTOURS ON TOP OF PERKINS LAKE SANDS



COUNTY: BUTTE

PERKINS LAKE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Exxon Corp. "Parrott Investment Company" B-1	Humble Oil & Refining Co. "Parrott Investment Company" B-1	16 20N 1W	MD	4,370	Perkins Lake	
Deepest well	Exxon Corp. "Parrott Investment Company" B-6	Humble Oil & Refining Co. "Parrott Investment Company" B-6	16 20N 1W	MD	6,500		Guinda Late Cretaceous

POOL DATA

ITEM	PERKINS LAKE					FIELD OR AREA DATA
Discovery date .....	September 1955					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	4,060					
Flow pressure (psi) .....	975					
Bean size (in.) .....	3/8					
Initial reservoir pressure (psi) .....	1,575-1,600					
Reservoir temperature (°F) .....	106					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	1,200					
Formation .....	Princeton Cyn. fill					
Geologic age .....	Eocene					
Average depth (ft.) .....	3,400					
Average net thickness (ft.) .....	10-150					
Maximum productive area (acres) .....	440					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	31					
So <sub>2</sub> (%) .....	25					
S <sub>wi</sub> (%) .....	75					
S <sub>gi</sub> (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ T .....						
Gas:						
Specific gravity (air = 1.0) .....	.580					
Heating value (Btu/cu. ft.) .....	950					
Water:						
Salinity, NaCl (ppm) .....	4,300					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

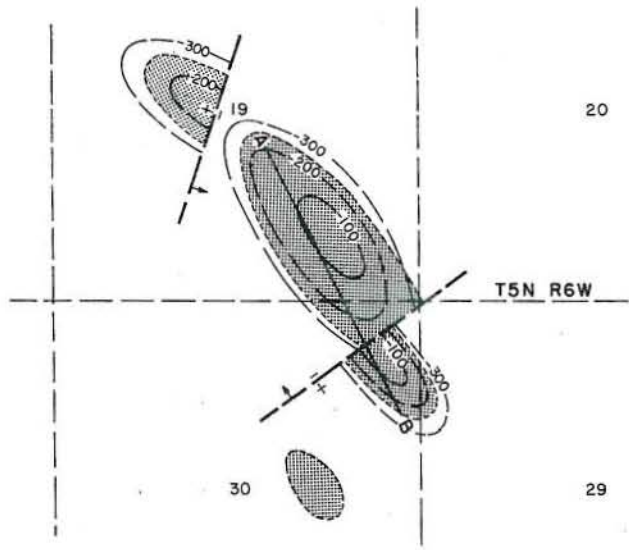
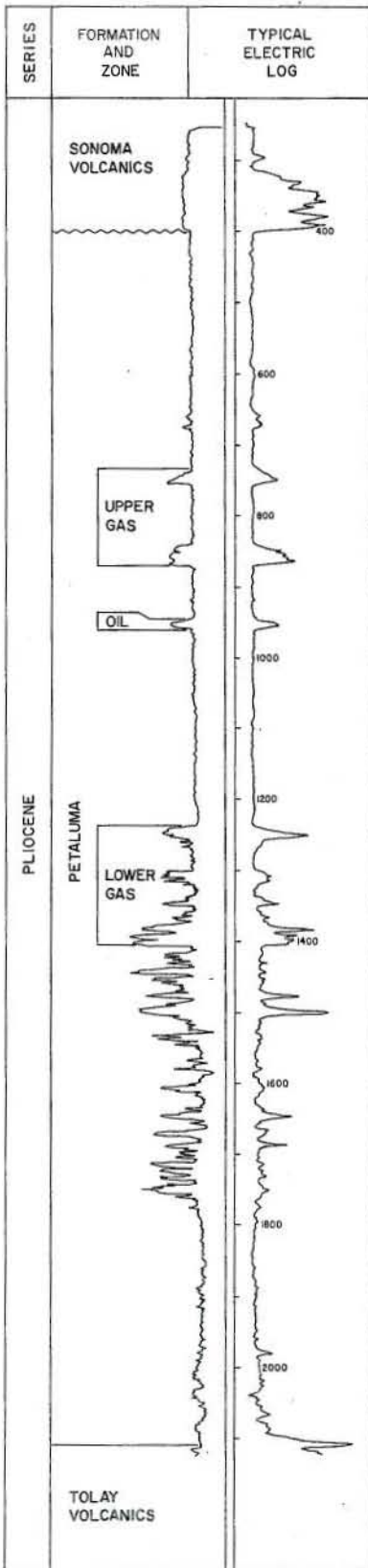
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	2,841,396					
Year .....	1960					

Base of fresh water (ft.): 1,500

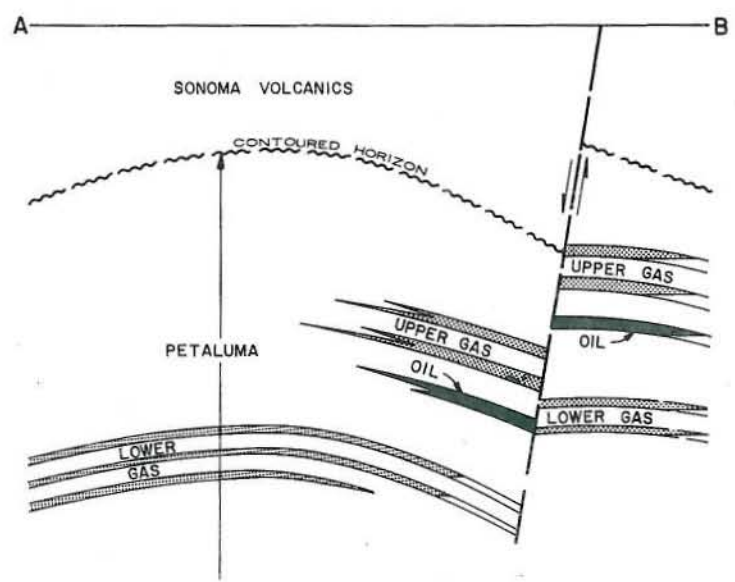
Remarks: Commercial gas deliveries began in December 1965.

Selected References: Harding, T. P., 1962, Perkins Lake Gas Field, Calif. : Calif. Div. of Mines Bull. 181. p. 103-105.  
Lorshbough, A. L., 1971, Perkins Lake Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 57, No. 1.

# PETALUMA OIL FIELD



CONTOURS ON TOP OF PETALUMA



COUNTY: SONOMA

PETALUMA OIL FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Herbert N. Witt No. 2	Same as present	19 SN 6W	MD	1,420	O11	
Deepest well	Shell Oil Co. "Murphy" 1	Same as present	19 SN 6W	MD	6,385		Franciscan(?) late Mesozoic

POOL DATA

ITEM	POOL DATA			FIELD OR AREA DATA
	UPPER GAS	OIL	LOWER GAS	
Discovery date .....	May 1958	May 1926	August 1941	
Initial production rates				
Oil (bbl/day) .....		12	3,030	
Gas (Mcf/day) .....	1,000		347	
Flow pressure (psi) .....			5/8	
Bean size (in.) .....	1/2			
Initial reservoir pressure (psi) .....	315		558	
Reservoir temperature (°F) .....	90	90	100	
Initial oil content (STB/ac.-ft.) .....	190		340	
Initial gas content (MSCF/ac.-ft.) .....				
Formation .....	Petaluma Pliocene	Petaluma Pliocene	Petaluma Pliocene	
Geologic age .....				
Average depth (ft.) .....	670	920	1,240	
Average net thickness (ft.) .....	20	25	20	
Maximum productive area (acres) .....				100
<b>RESERVOIR ROCK PROPERTIES</b>				
Porosity (%) .....	30**		30**	
Soj (%) .....				
Swi (%) .....	30**		30**	
Sgi (%) .....	70**		70**	
Permeability to air (md) .....				
<b>RESERVOIR FLUID PROPERTIES</b>				
Oil:		20		
Oil gravity (*API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	.568		.568	
Heating value (Btu/cu. ft.) .....	1,018		1,018	
Water:				
Salinity, NaCl (ppm) .....	4,600		4,600	
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				
<b>ENHANCED RECOVERY PROJECTS</b>				
Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				
Peak oil production (bbl)				1,508
Year .....				1951
Peak gas production, net (Mcf)				136,004
Year .....				1956

Base of fresh water (ft.): 100

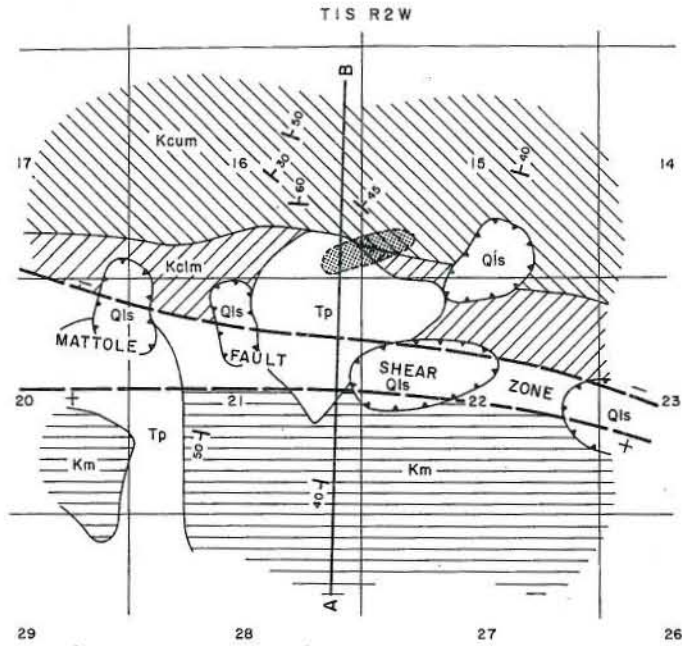
Remarks: Commercial gas deliveries began in August 1942. Maximum proved acreage is 95 for gas, 10 for oil, and 5 with gas and oil combined.

Selected References: Johnson, F. A., 1943, Petaluma Region in Geologic Formations and Economic Development of the Oil and Gas Fields of Calif.: Calif. Div. of Mines Bull. 118, p. 622-627.



# PETROLIA OIL FIELD (Abandoned)

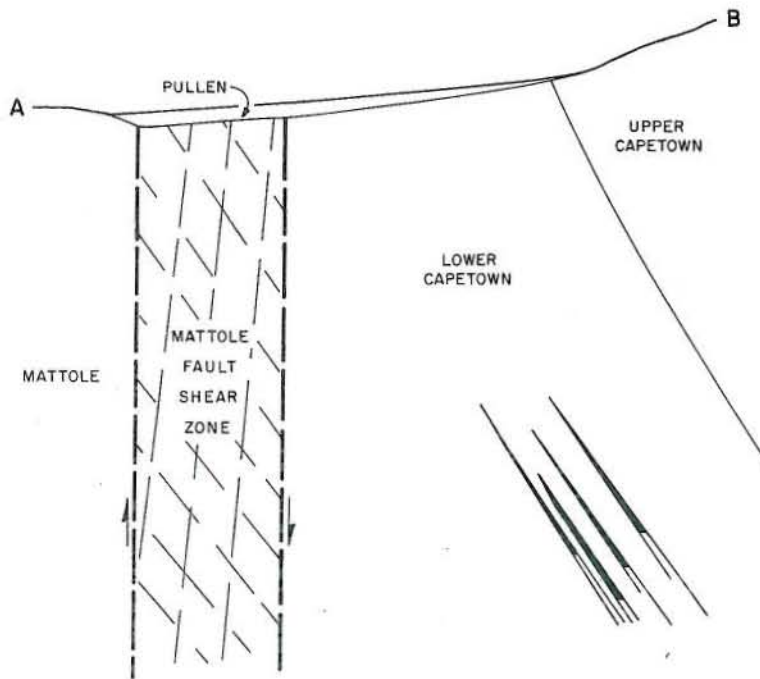
SERIES	FORMATION AND MEMBER	THICKNESS (FEET)
	UPPER HOLOCENE	LANDSLIDE (Qls)
UPPER MIOCENE	PULLEN (Tp)	0 to 100
CRETACEOUS	UPPER MEMBER (Kcum)	±7000
	LOWER MEMBER (Kclm)	
	MATTOLE (Km)	±5000



$f_{40}$  indicates strike and dip of strata  
 landslide contact

MAP AND CROSS SECTION BASED UPON DATA BY A T ANDERSON, CONSULTANT, AND MODIFIED BY THE DIVISION OF OIL AND GAS.

SERIES	FORMATION	MEMBER AND ZONE	TYPICAL ELECTRIC LOG
CRETACEOUS	CAPE TOWN	UPPER MEMBER	
		LOWER MEMBER	
		OIL ZONE	



COUNTY: HUMBOLDT

PETROLIA OIL FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	West Coast Oil Corp. "West Coast" 1	Same as present	16 1S 2W	H	1,785	unnamed	
Deepest well	Conoco Inc. "Chambers" 1	Continental Oil Co. "Chambers" 1	21 1S 2W	H	4,041		Capetown Cretaceous

POOL DATA

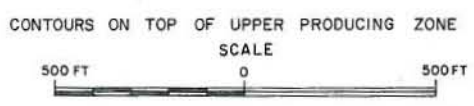
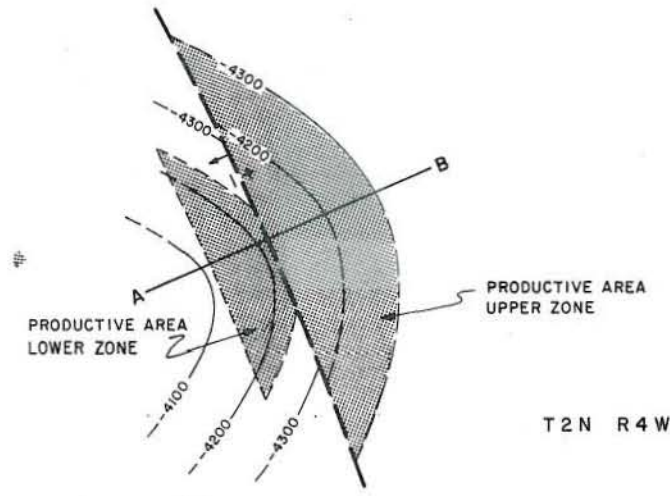
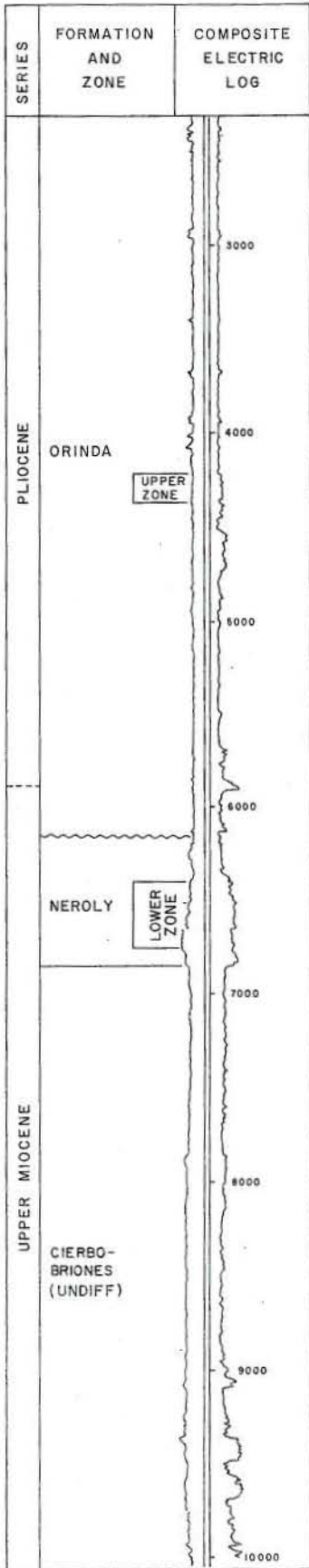
ITEM	UNNAMED					FIELD OR AREA DATA
Discovery date .....	October 1953					
Initial production rates						
Oil (bbl/day) .....	100					
Gas (Mcf/day) .....						
Flow pressure (psi) .....						
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	642					
Reservoir temperature (°F) .....	96					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Capetown Cretaceous					
Geologic age .....	1,570					
Average depth (ft.) .....	90					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	10					
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....						
Soj (%) .....						
Swj (%) .....						
Sgj (%) .....						
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (°API) .....	46					
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....						
Heating value (Btu/cu. ft.) .....						
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)	210					
Year .....	1953					
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 40

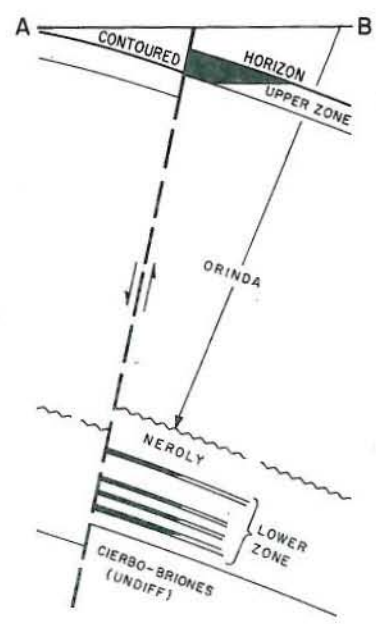
Remarks: Commercial oil production began in November 1953. The field was abandoned in September 1971. Two wells were completed and cumulative oil production was 350 barrels. This field is about four miles northwest of California's first oil production (circa 1865).

Selected References:

# PINOLE POINT OIL FIELD (Abandoned)



19	20
30	29



COUNTY: CONTRA COSTA

**PINOLE POINT OIL FIELD  
(ABD)**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Bethlehem Steel Corp. "Bethlehem" 1	Standard Oil Company of Calif. "Bethlehem" 1	19 2N 4W	MD	9,997	Lower	Cierbo-Briones late Miocene
Deepest well	Same as above	"	"	"	"	"	"

**POOL DATA**

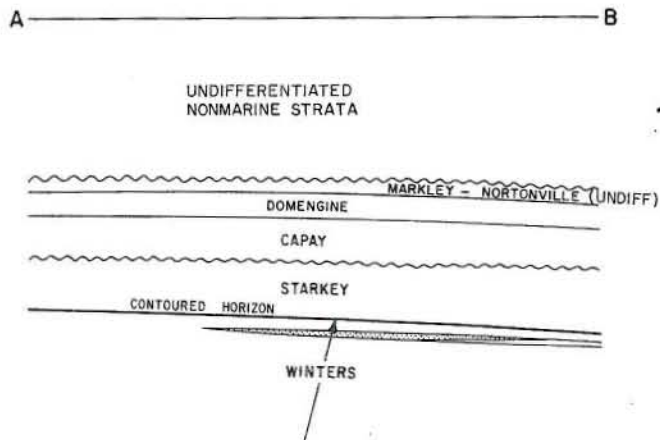
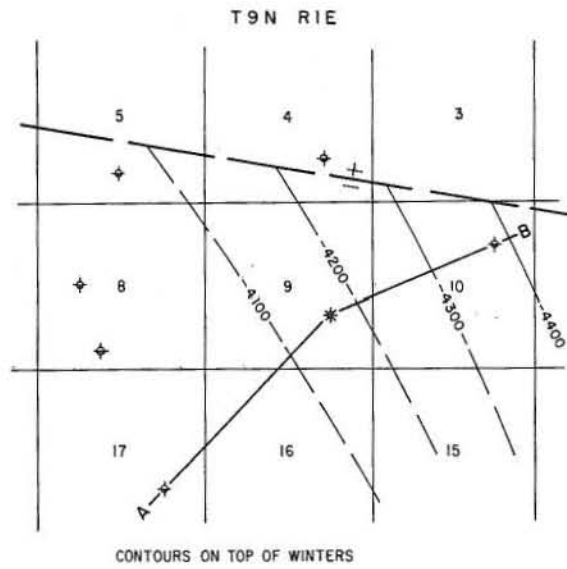
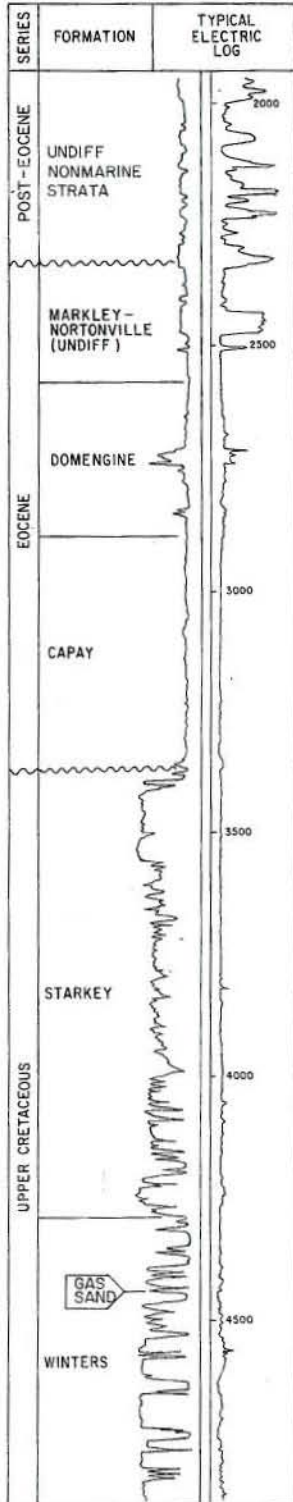
ITEM	POOL DATA		FIELD OR AREA DATA
	UPPER	LOWER	
Discovery date .....	August 1969	April 1969	
Initial production rates			
Oil (bbl/day) .....	6	208	
Gas (Mcf/day) .....	-	361	
Flow pressure (psi) .....	-	520	
Bean size (in.) .....	-	12/64	
Initial reservoir pressure (psi) .....	1,870	2,795	
Reservoir temperature (°F) .....	138	168	
Initial oil content (STB/ac.-ft.) .....			
Initial gas content (MSCF/ac.-ft.) .....			
Formation .....	Orinda	Neroly	
Geologic age .....	Pliocene	late Miocene	
Average depth (ft.) .....	4,350	6,400	
Average net thickness (ft.) .....	75	70	
Maximum productive area (acres) .....			20
<b>RESERVOIR ROCK PROPERTIES</b>			
Porosity (%) .....			
So <sub>i</sub> (%) .....			
Sw <sub>i</sub> (%) .....			
Sg <sub>i</sub> (%) .....			
Permeability to air (md) .....			
<b>RESERVOIR FLUID PROPERTIES</b>			
Oil:			
Oil gravity (°API) .....	11	41	
Sulfur content (% by wt.) .....			
Initial solution GOR (SCF/STB) .....			
Initial oil FVF (RB/STB) .....			
Bubble point press. (psia) .....			
Viscosity (cp) @ °F .....			
Gas:			
Specific gravity (air = 1.0) .....			
Heating value (Btu/cu. ft.) .....			
Water:			
Salinity, NaCl (ppm) .....		14,600	
T.D.S. (ppm) .....			
R <sub>w</sub> (ohm/m) (77°F) .....			
<b>ENHANCED RECOVERY PROJECTS</b>			
Enhanced recovery projects .....			
Date started .....			
Date discontinued .....			
Peak oil production (bbl)			5,575
Year .....			1969
Peak gas production, net (Mcf)			65,608
Year .....			1973

Base of fresh water (ft.): 200

Remarks: Commercial oil production began in April 1969. The field was abandoned in July 1975. Two wells were completed and cumulative oil production was 11,282 barrels.

Selected References:

# PLAINFIELD GAS FIELD



COUNTY: YOLO

PLAINFIELD GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Supreme Oil & Gas Corp. "Supreme-Bell" 1	Supreme Oil & Gas Corp. "R.M. Bell Community" 1	9 9N 1E	MD	4,553 a/	unnamed	
Deepest well	Same as above	D. C. Basolo, Jr. "R. M. Bell Community" 1	9 9N 1E	MD	5,070		Winters Late Cretaceous

POOL DATA

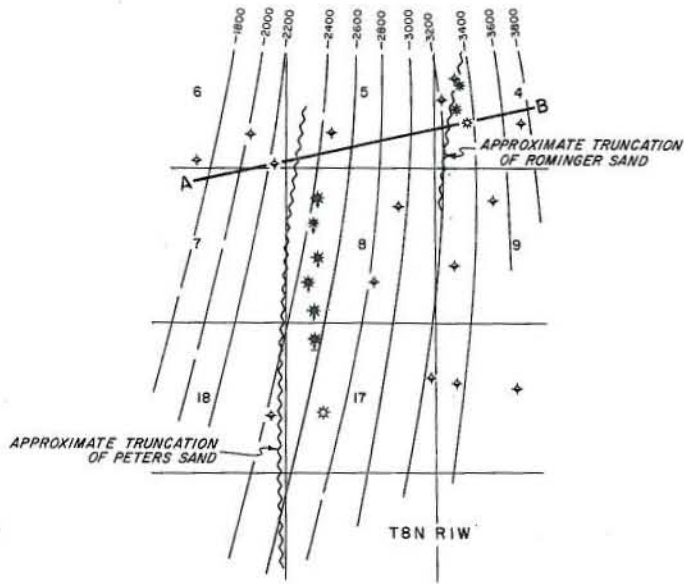
ITEM	UNNAMED					FIELD OR AREA DATA
Discovery date .....	September 1967					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	782					
Flow pressure (psi) .....	920					
Bean size (in.) .....	3/16					
Initial reservoir pressure (psi) .....	1,585					
Reservoir temperature (°F) .....	113					
Initial oil content (STB/ac.-ft.) .....	610-770					
Initial gas content (MSCF/ac.-ft.) .....	Winters					
Formation .....	Late Cretaceous					
Geologic age .....	4,430					
Average depth (ft.) .....	4					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	40					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	25-29***					
So <sub>g</sub> (%) .....	45-50***					
Sw <sub>g</sub> (%) .....	50-55***					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.595††					
Heating value (Btu/cu. ft.) .....	915					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 2,500

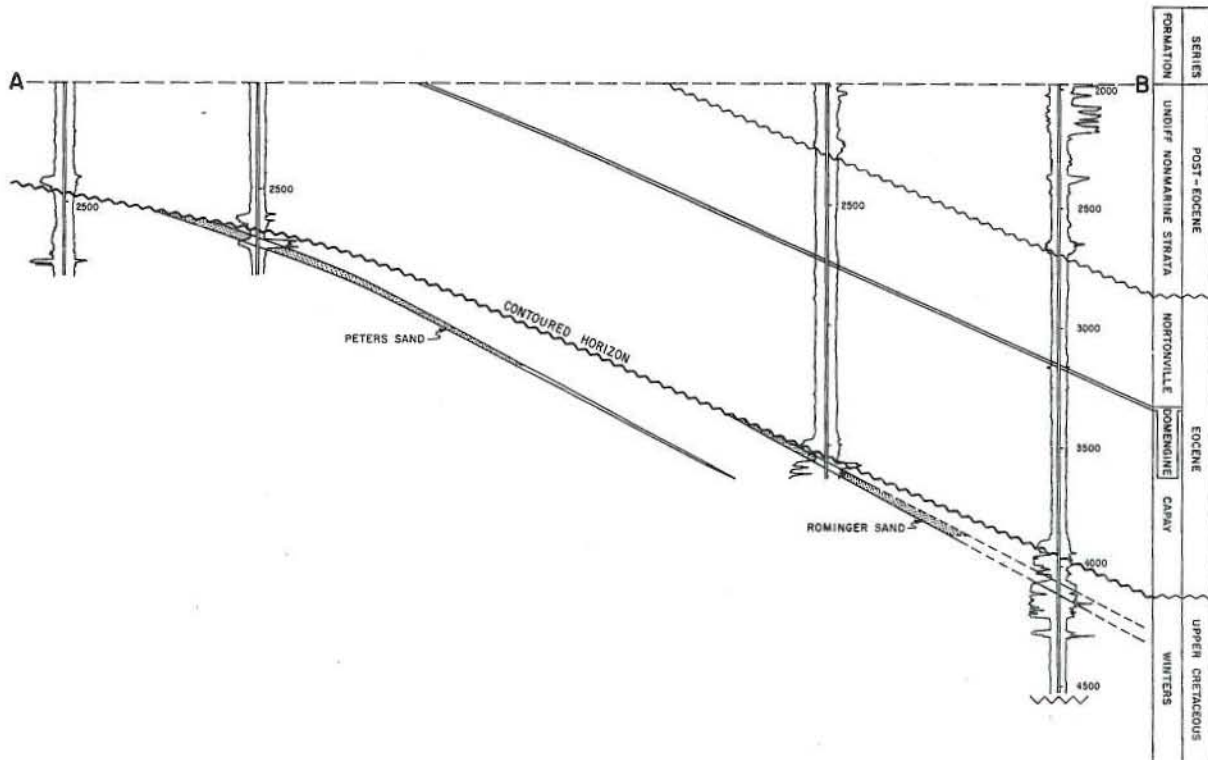
Remarks: Commercial gas deliveries have not yet begun. The well was originally drilled and abandoned in 1960 by D. C. Basolo, Jr.  
a/ Sidetracked hole, redrilled from 2,548 feet.

Selected References:

# PLEASANT CREEK GAS FIELD



CONTOURS ON TOP OF WINTERS



COUNTY: YOLO

PLEASANT CREEK GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Pacific Gas and Electric Co. "Pleasant Creek Unit 3" 1	Shell Oil Co. "Pleasant Creek Unit 3" 1	8 8N 1W	MD	3,000	Peters	
Deepest well	The Divide Ridge Oil Co. No. 1	Same as present	8 8N 1W	MD	5,006		Forbes (?) Late Cretaceous

POOL DATA

ITEM	ROMINGER	PETERS				FIELD OR AREA DATA
Discovery date .....	June 1953	December 1948				
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	5,250	9,550				
Flow pressure (psi) .....	1,390	510				
Bean size (in.) .....	1/2	1				
Initial reservoir pressure (psi) .....	1,670	1,270				
Reservoir temperature (°F) .....	118	107				
Initial oil content (STB/ac-ft.) .....						
Initial gas content (MSCF/ac-ft.) .....	1,000-1,200	800-900				
Formation .....	Winters	Winters				
Geologic age .....	Late Cretaceous	Late Cretaceous				
Average depth (ft.) .....	3,700	2,800				
Average net thickness (ft.) .....	25	30				
Maximum productive area (acres) .....						
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	31-34	31-34				
So <sub>2</sub> (%) .....						
Sw <sub>i</sub> (%) .....	30-35	30-35				
Sg <sub>i</sub> (%) .....	65-70	65-70				
Permeability to air (md) .....		1,000				
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.572	.572				
Heating value (Btu/cu. ft.) .....	990	990				
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						1,021,466 1952

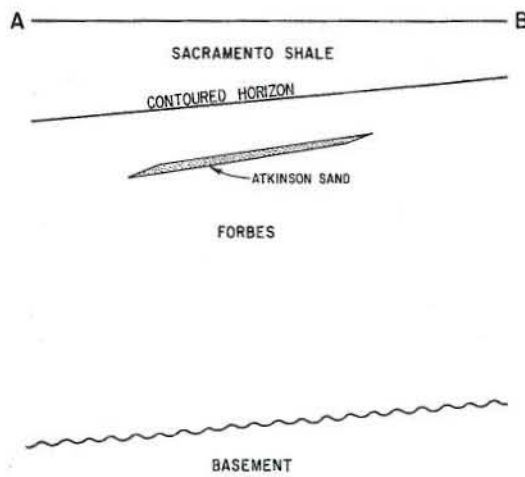
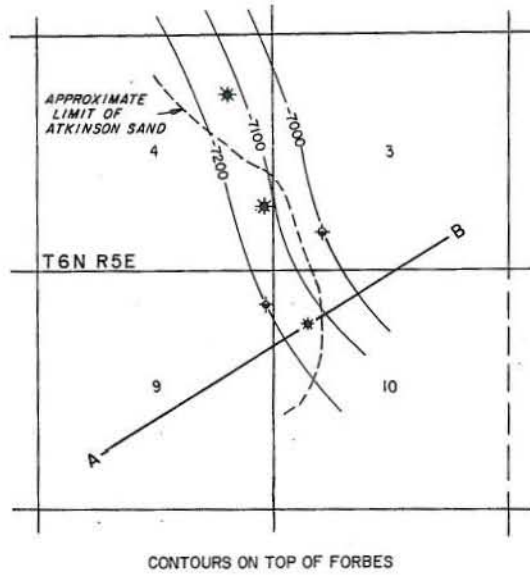
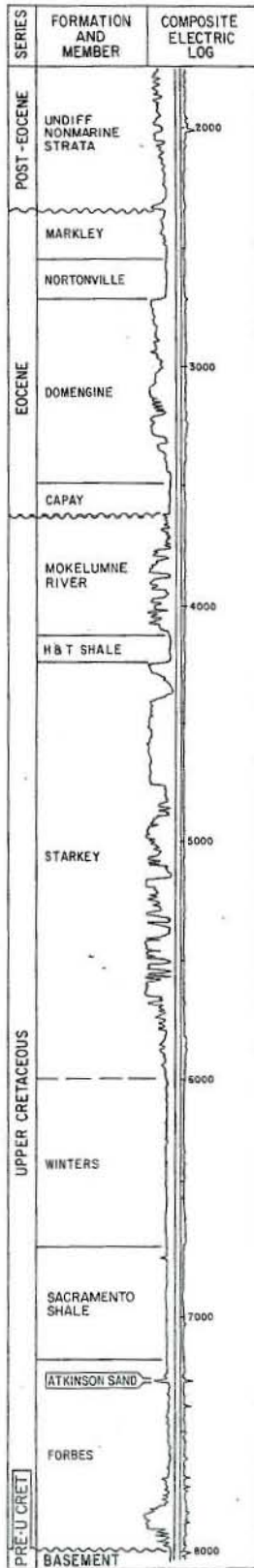
Base of fresh water (ft.): 1,700-2,700

Remarks: Commercial gas deliveries began in April 1951. Northeast portion of Pleasant Creek Gas field was also known as Chickahominy Gas field. Pacific Gas and Electric Company acquired the wells that are productive from the "Peters" sand in 1958, and converted them to gas storage in April 1960. The working gas storage capacity is 2,140,000 Mcf with an approximate maximum withdrawal rate of 60,000 Mcf/day.

Selected References: Hunter, G. W., 1955, Pleasant Creek Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 41, No. 1.



# POPPY RIDGE GAS FIELD



COUNTY: SACRAMENTO

POPPY RIDGE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Milon L. Johnston "Atkinson" 1	Same as present	10 6N SE	MD	7,460	Atkinson	
Deepest well	Milon L. Johnson "Jillson" 1	Same as present	9 6N SE	MD	8,118		basement pre-Lt. Cret.

POOL DATA

ITEM	ATKINSON					FIELD OR AREA DATA
Discovery date .....	March 1962					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	4,500					
Flow pressure (psi) .....	2,575					
Bean size (in.) .....	17/64					
Initial reservoir pressure (psi) .....	3,220					
Reservoir temperature (°F) .....	138					
Initial oil content (STB/ac.-ft.) .....	1,200-1,600					
Initial gas content (MSCF/ac.-ft.) .....	Forbes					
Formation .....	Late Cretaceous					
Geologic age .....						
Average depth (ft.) .....	7,270					
Average net thickness (ft.) .....	9					
Maximum productive area (acres) .....	100					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	23-27					
So <sub>2</sub> (%) .....	35-40***					
Sw <sub>i</sub> (%) .....	60-65***					
Sg (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.634					
Heating value (Btu/cu. ft.) .....	826					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

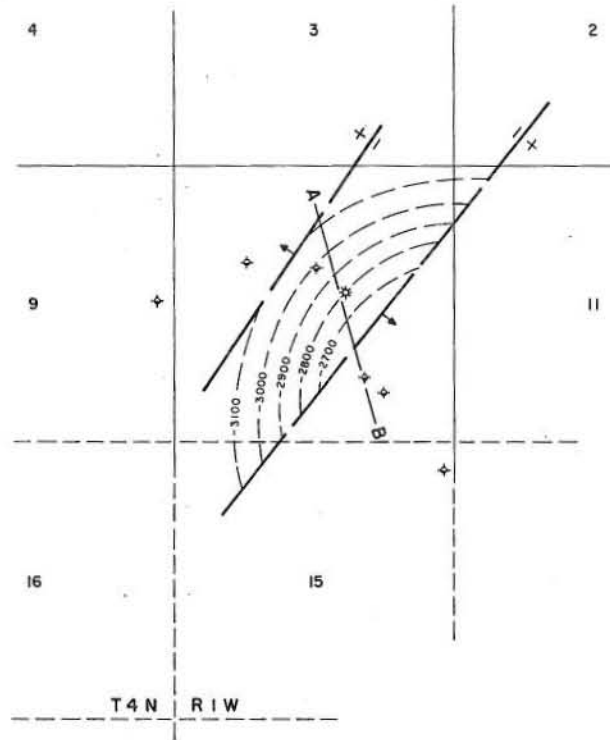
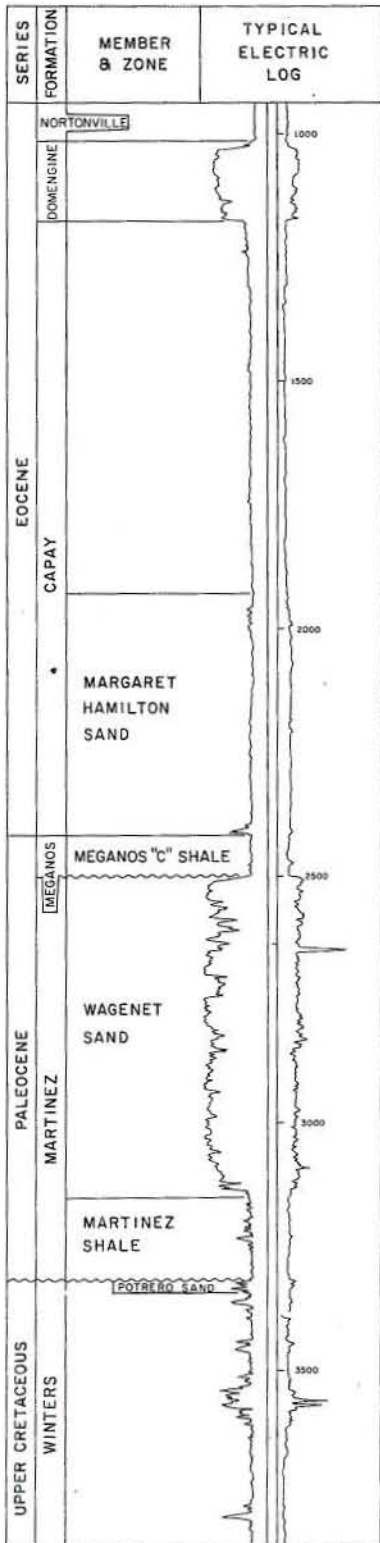
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 1,700

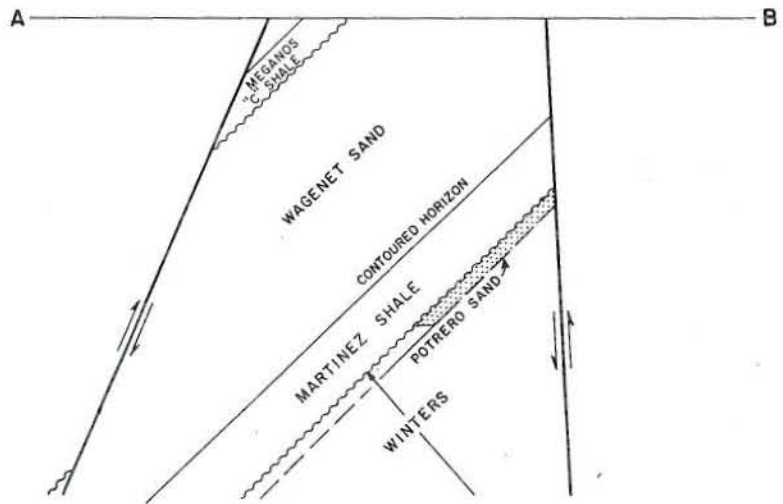
Remarks: Commerical gas deliveries have not yet begun

Selected References:

POTRERO HILLS GAS FIELD  
(Abandoned)



CONTOURS ON BASE OF WAGNET SAND



COUNTY: SOLANO

POTRERO HILLS GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	ARCO Oil and Gas Co. "Potrero Hills" 1	Richfield Oil Corp. "Potrero Hills" 1	10 4N 1W	MD	5,334	Potrero	
Deepest well	MCDOR Oil and Gas Corp. "McCulloch-Macdon Scully Unit" 1	McCulloch Oil Exploration Co. of Calif., Inc. "McCulloch-Macdon Scully Unit" 1	10 4N 1W	MD	9,020		undiff. marine Late Cretaceous

POOL DATA

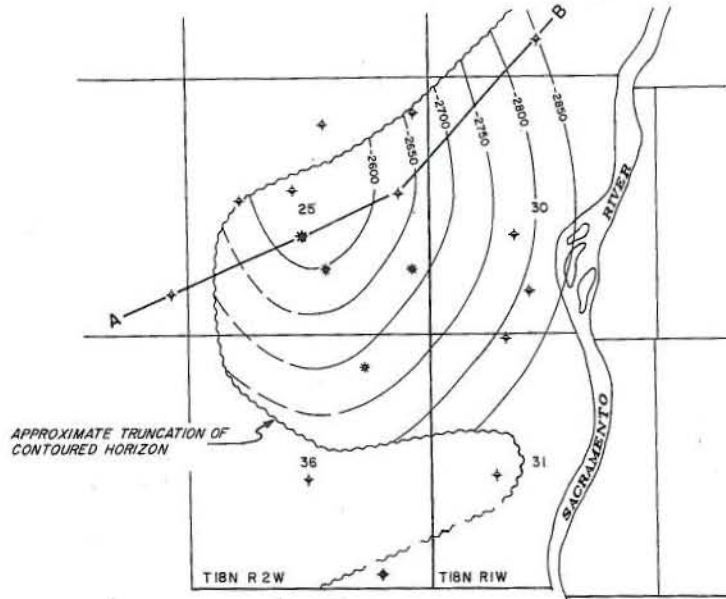
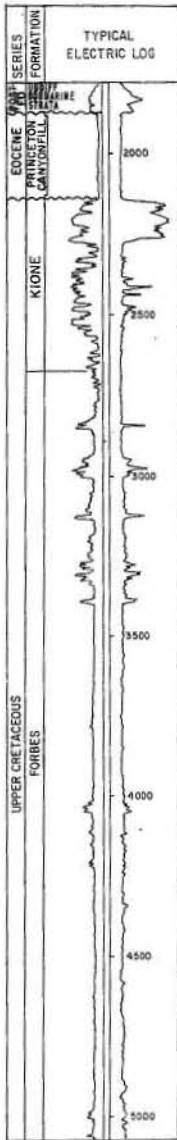
ITEM	POTRERO					FIELD OR AREA DATA
Discovery date .....	December 1938					
Initial production rates						
Oil (bbl/day) .....	1,500					
Gas (Mcf/day) .....	1,050					
Flow pressure (psi) .....	1/4					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,420					
Reservoir temperature (°F) .....	110					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Winters					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	3,245					
Average net thickness (ft.) .....	40					
Maximum productive area (acres) .....	40					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....						
S <sub>oi</sub> (%) .....						
S <sub>wi</sub> (%) .....						
S <sub>gi</sub> (%) .....						
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.573 ††					
Heating value (Btu/cu. ft.) .....	970					
Water:						
Salinity, NaCl (ppm) .....	5,800					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....	20,042 1942					

Base of fresh water (ft.): 1,100

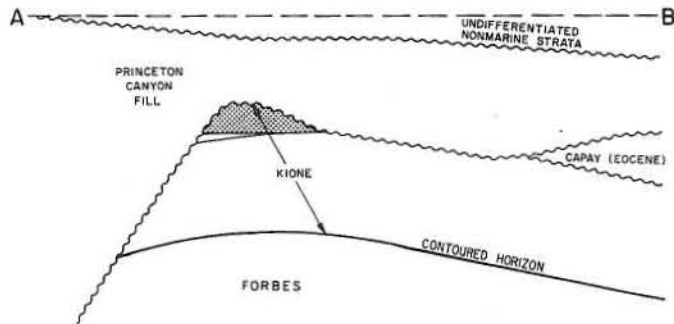
Remarks: Commercial gas deliveries began in October 1942. The well was produced for 3 months and was abandoned in April 1943. Cumulative gas production is 21,542 Mcf.

Selected References: Tolman, F. B., 1943, Potrero Hills Gas Field in Geologic Formations and Economic Development of the Oil and Gas Fields of Calif.: Calif. Div. of Mines Bull. 118, p. 595-598.

# PRINCETON GAS FIELD



CONTOURS ON BASE OF KIONE



COUNTY: COLUSA

PRINCETON GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Rheem Calif. Land Co. "Southam" 1	Richard S. Rheem, Opr. "Southam" 1	25 18N 2W	MD	5,072	Kione	
Deepest well	Intex Oil Co. "Capitol" 1-30	Same as present	30 18N 1W	MD	7,703		Dobbins Late Cretaceous

POOL DATA

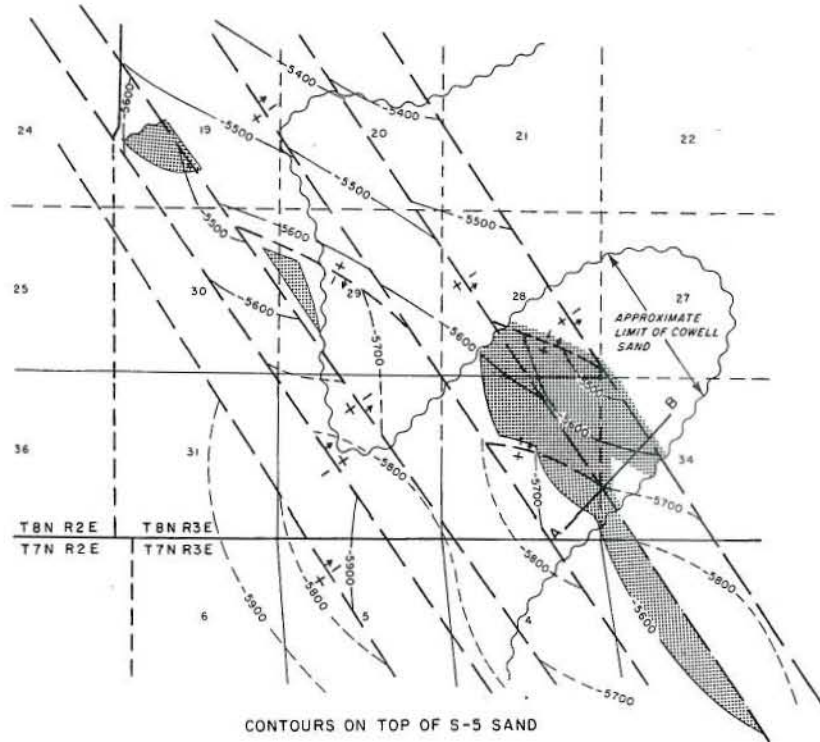
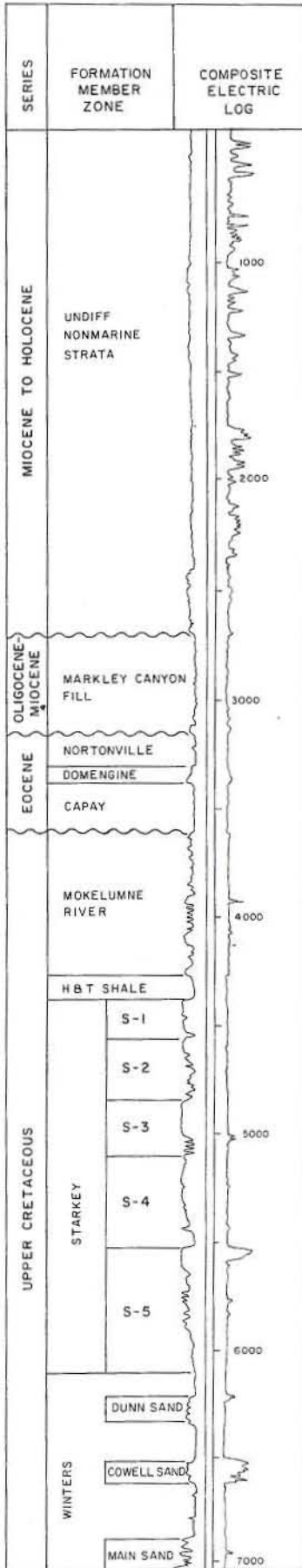
ITEM	KIONE					FIELD OR AREA DATA
Discovery date .....	December 1953					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	2,850					
Flow pressure (psi) .....	940					
Bean size (in.) .....	3/8					
Initial reservoir pressure (psi) .....	1,015					
Reservoir temperature (°F) .....	85					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	610-650					
Formation .....	Kione					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	2,170					
Average net thickness (ft.) .....	110					
Maximum productive area (acres) .....	320					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	27-29***					
So <sub>i</sub> (%) .....						
Sw <sub>i</sub> (%) .....	30*					
Sg <sub>i</sub> (%) .....	70*					
Permeability to air (md) .....	125-320					
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.572					
Heating value (Btu/cu. ft.) .....	980					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	881,744					
Year .....	1956					

Base of fresh water (ft.): 1,800

Remarks: Commercial gas deliveries began in August 1955.

Selected References: Bruce, Donald D., 1959. Princeton Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 45, No. 1.

# PUTAH SINK GAS FIELD



COUNTY: YOLO

PUTAH SINK GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "Shoshone-Cowell" 1	Same as present	34 8N 3E	MD	6,975	Cowell	
Deepest well	Occidental Petroleum Corp. "Glide" 1	Same as present	34 8N 3E	MD	8,125		Winters Late Cretaceous

POOL DATA

ITEM	POOL DATA			FIELD OR AREA DATA
	S-4	DUNN	COWELL	
Discovery date .....	November 1973	April 1974	June 1973	
Initial production rates				
Oil (bbl/day) .....				
Gas (Mcf/day) .....	2,080	1,600	970	
Flow pressure (psi) .....	2,050	2,050	2,550	
Bean size (in.) .....		1/2	28/64	
Initial reservoir pressure (psi) .....	2,420	2,710	2,995	
Reservoir temperature (°F) .....	110	118	122	
Initial oil content (STB/ac.-ft.) .....				
Initial gas content (MSCF/ac.-ft.) .....	1,500-1,900	1,100-1,600	1,200-1,700	
Formation .....	Starkey	Winters	Winters	
Geologic age .....	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	5,550	6,210	6,500	
Average net thickness (ft.) .....	50	20	60	
Maximum productive area (acres) .....				720

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	29-33†	25-28†	25-28†	
Soj (%) .....	22-30†	30-45†	30-45†	
Sgi (%) .....	70-78†	55-70†	55-70†	
Permeability to air (md) .....				

RESERVOIR FLUID PROPERTIES

<b>Oil:</b>				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
<b>Gas:</b>				
Specific gravity (air = 1.0) .....	.607	.610	.605	
Heating value (Btu/cu. ft.) .....	900	890	910	
<b>Water:</b>				
Salinity, NaCl (ppm) .....				
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				

Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				3,875,386
Year .....				1976

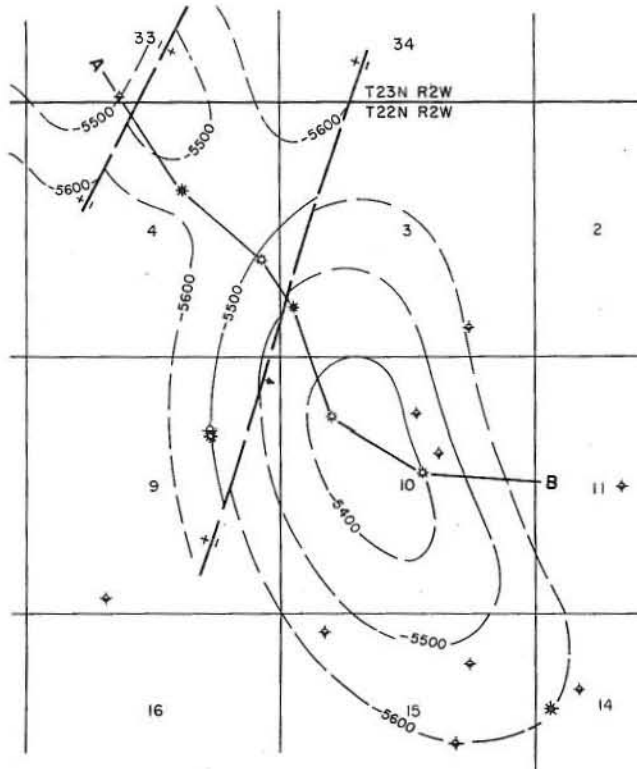
Base of fresh water (ft.): 2,000-2,500

Remarks: Commercial gas deliveries began in December 1974.

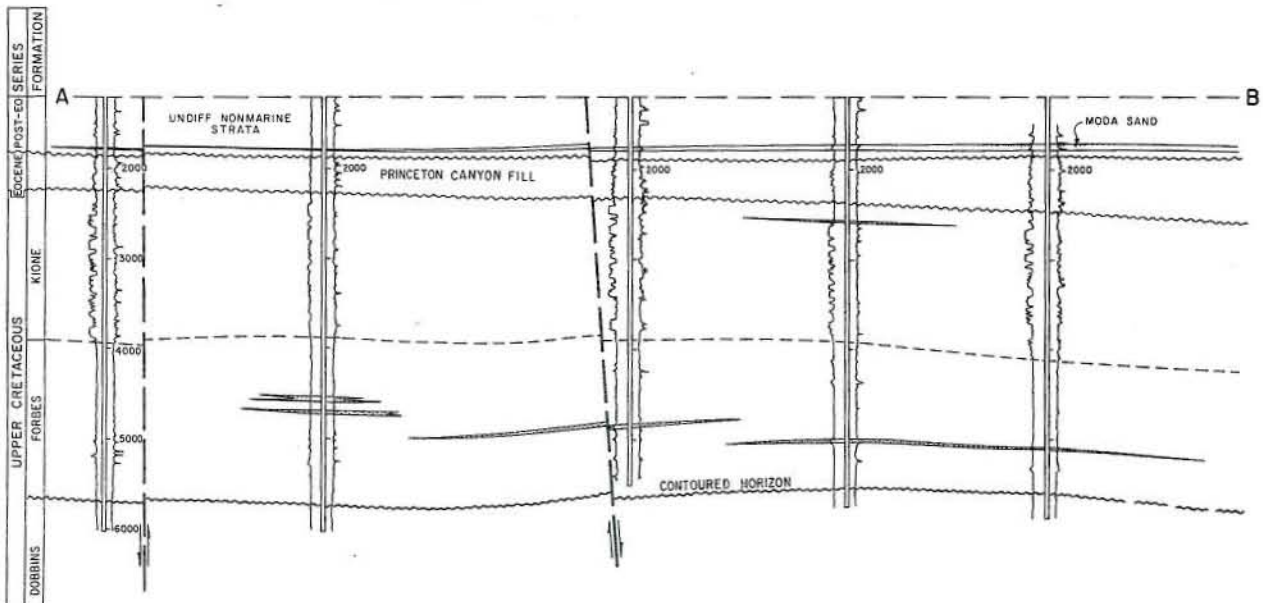
Selected References:



# RANCHO CAPAY GAS FIELD



CONTOURS ON BASE OF FORBES



COUNTY: GLENN

RANCHO CAPAY GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	G.E. Kadane & Sons "Moda A" 54-10	General Petroleum Corp. "Moda A" 54-10	10 22N 2W	MD	5,898	Moda	
Deepest well	The Termo Co. "Rancho Capay Unit 1" 1	Trico Oil & Gas Co. "Rancho Capay Unit" 1	4 22N 2W	MD	6,035		Dobbins Late Cretaceous

POOL DATA

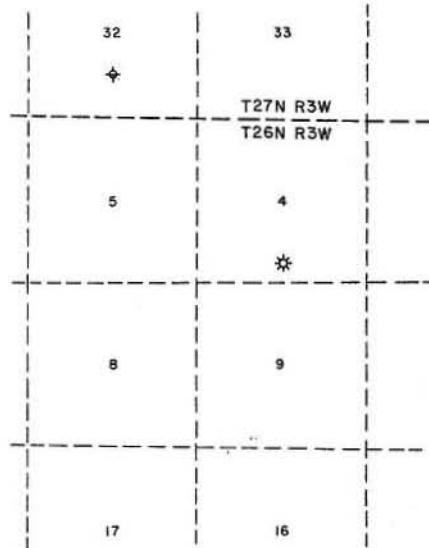
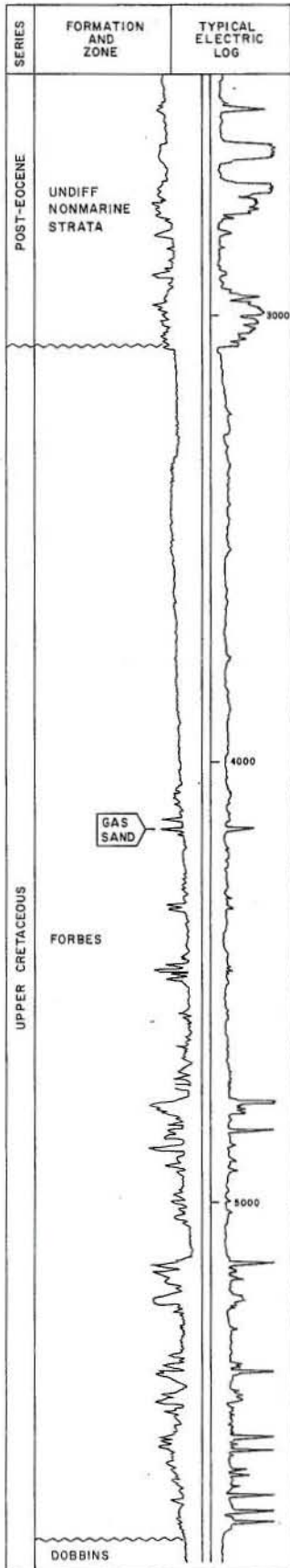
ITEM	POOL DATA			FIELD OR AREA DATA
	MODA	KIONE	UNNAMED	
Discovery date .....	August 1959	June 1966	August 1962	
Initial production rates				
Oil (bbl/day) .....				
Gas (Mcf/day) .....	5,800	730	4,000	
Flow pressure (psi) .....	390	1,000	1,400	
Bean size (in.) .....	56/64	12/64	1/4	
Initial reservoir pressure (psi) .....	660	1,120	2,405-2,705	
Reservoir temperature (°F) .....	96	115	156-166	
Initial oil content (STB/ac.-ft.) .....				
Initial gas content (MSCF/ac.-ft.) .....	400-490	520-650	800-1,000	
Formation .....	undiff. nonmarine	Kione	Forbes	
Geologic age .....	Post-Eocene	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	1,710	2,580	4,540-5,000	
Average net thickness (ft.) .....	20	10	1-30	
Maximum productive area (acres) .....				490
<b>RESERVOIR ROCK PROPERTIES</b>				
Porosity (%) .....	30-34***	24-28†	18-24	
So <sub>2</sub> (%) .....				
Sw <sub>1</sub> (%) .....	25-30***	30-35†	35-40	
Sg <sub>1</sub> (%) .....	70-75***	65-70†	60-65	
Permeability to air (md) .....				
<b>RESERVOIR FLUID PROPERTIES</b>				
Oil:				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	-	-	.562	
Heating value (Btu/cu. ft.) .....	860	950	1,000	
Water:				
Salinity, NaCl (ppm) .....				
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				
<b>ENHANCED RECOVERY PROJECTS</b>				
Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				
Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				246,336
Year .....				1967

Base of fresh water (ft.): 1,200

Remarks: Commercial gas deliveries began in March 1961.

Selected References: Land, P. E., 1970, Rancho Capay Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 56, No. 1.

# RED BANK CREEK GAS FIELD (Abandoned)



DEFINITIVE DATA UNAVAILABLE

COUNTY: TEHAMA

RED BANK CREEK GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Red Bluff Associates "Goff" 1	Kenyon C. Sills, Oper., Inc. "Goff" 1	4 26N 3W	MD	4,196 <sup>a</sup>	unnamed	
Deepest well	Same as above	Humble Oil & Refining Co. "Henry James Goff, et ux" 1	4 26N 3W	MD	5,800		Dobbins Late Cretaceous

POOL DATA

ITEM	UNNAMED					FIELD OR AREA DATA
Discovery date .....	August 1964					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,040					
Flow pressure (psi) .....	1,227					
Bean size (in.) .....	3/16					
Initial reservoir pressure (psi) .....	2,040					
Reservoir temperature (°F) .....	121					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	460-680					
Formation .....	Forbes					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	4,158					
Average net thickness (ft.) .....	8					
Maximum productive area (acres) .....	40					
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	15-20***					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	45-50***					
Sg <sub>i</sub> (%) .....	50-55***					
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.6031†					
Heating value (Btu/cu. ft.) .....	900					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....	9,767 1965					

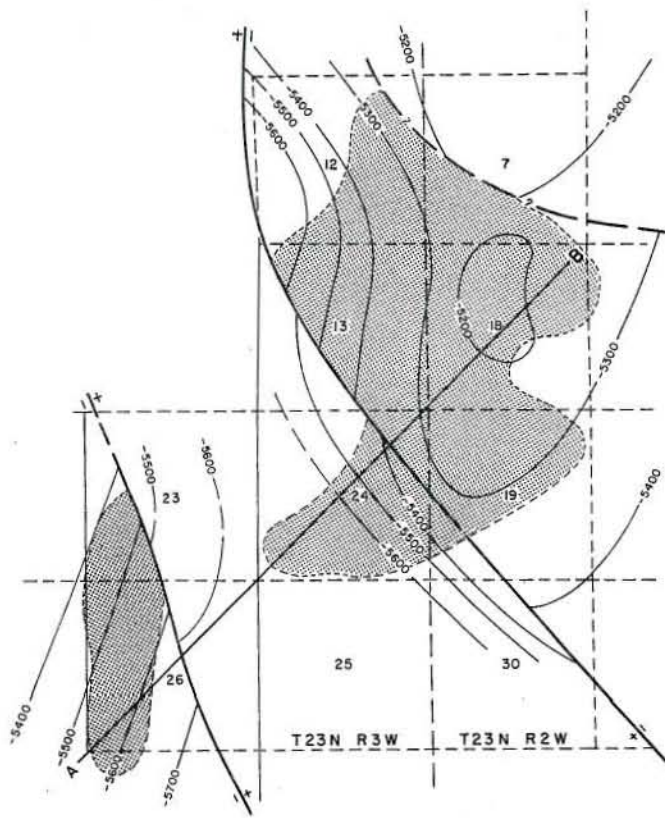
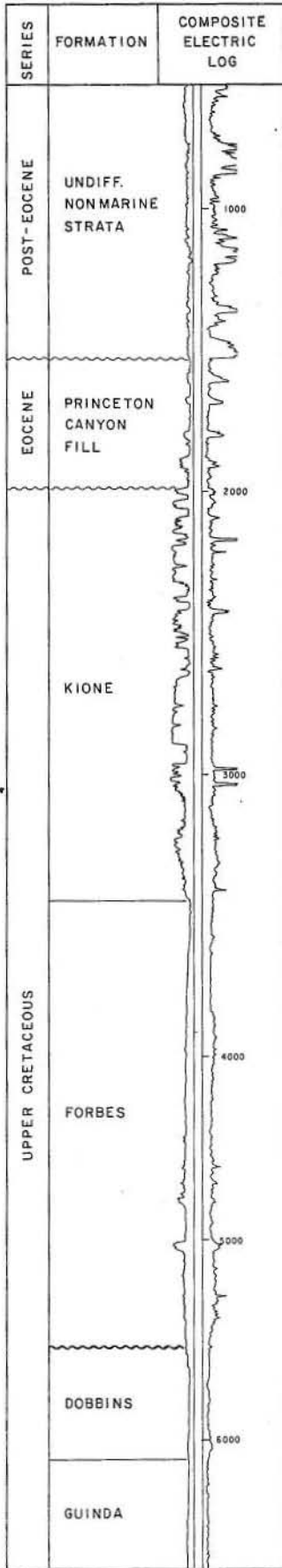
Base of fresh water (ft.): 2,650

Remarks: Commercial gas deliveries began in December 1965. The field was abandoned in March 1972. Only one well was completed and cumulative gas production was 19,076 Mcf.

<sup>a</sup>/ The well was originally drilled and abandoned by Humble Oil and Refining Co. (now Exxon Corp.), then reentered and completed by Kenyon C. Sills.

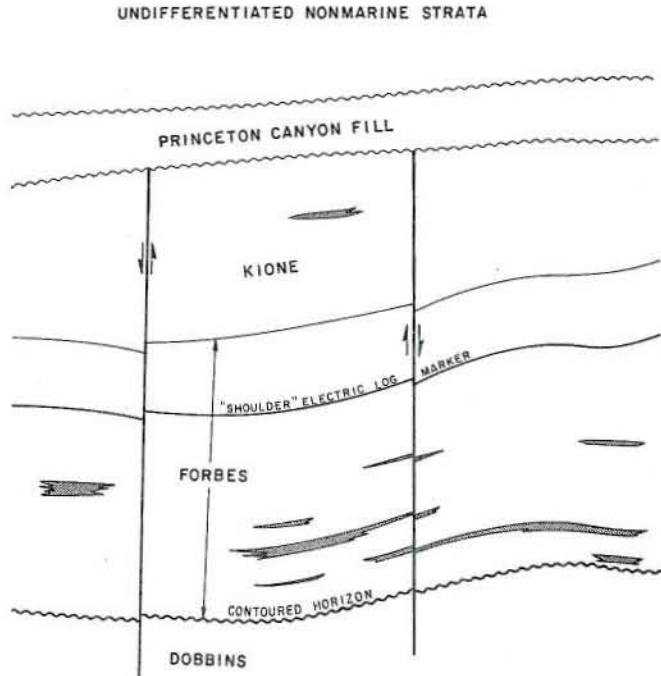
Selected References:

# RICE CREEK GAS FIELD



CONTOURS ON TOP OF DOBBINS

A ————— B



COUNTY: TEHAMA

RICE CREEK GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Sun Oil Co. "George S. Reid Unit" 1	Sunray DX Oil Co. "George S. Reid Unit" 1	13 23N 3W	MD	5,793	Forbes	
Deepest well	Sun Oil Co. "Victor Ranch" 4	Sunray DX Oil Co. "Victor Ranch" 4	7 23N 2W	MD	12,175		Venado Late Cretaceous

POOL DATA

ITEM	UNNAMED	UNNAMED				FIELD OR AREA DATA
Discovery date .....	May 1964	May 1963				
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	6,115 <sup>a/</sup>	3,230				
Flow pressure (psi) .....	835-970	1,290				
Bean size (in.) .....	3/8-1/4	5/16				
Initial reservoir pressure (psi) .....	970-1,270	2,260-3,140				
Reservoir temperature (°F) .....	87-95	114-129				
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	550-610	810-1,000				
Formation .....	Kione	Forbes				
Geologic age .....	Late Cretaceous	Late Cretaceous				
Average depth (ft.) .....	2,000-2,660	4,250-5,500				
Average net thickness (ft.) .....	5-40	5-30				
Maximum productive area (acres) .....						2,800
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	25-28***	17-23 †				
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	35-40***	40-50 †				
Sg <sub>i</sub> (%) .....	60-65***	50-60 †				
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.577-.615 ††	.558-.570 ††				.560
Heating value (Btu/cu. ft.) .....	870-965	988-1,016				1,005
Water:						
Salinity, NaCl (ppm) .....	10,100	16,600-23,800				
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						2,637,249 1967

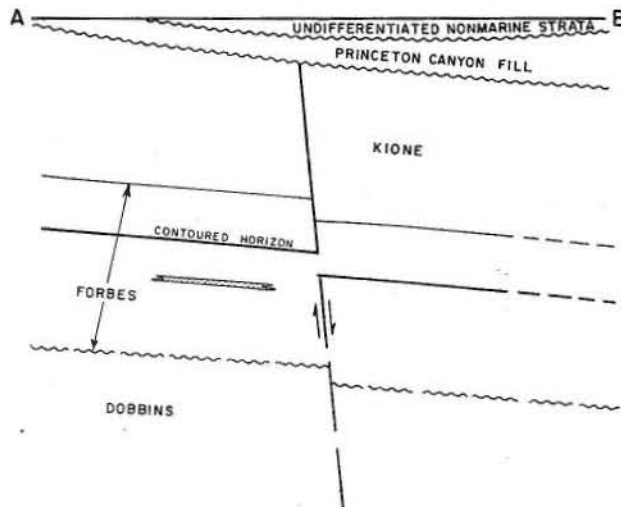
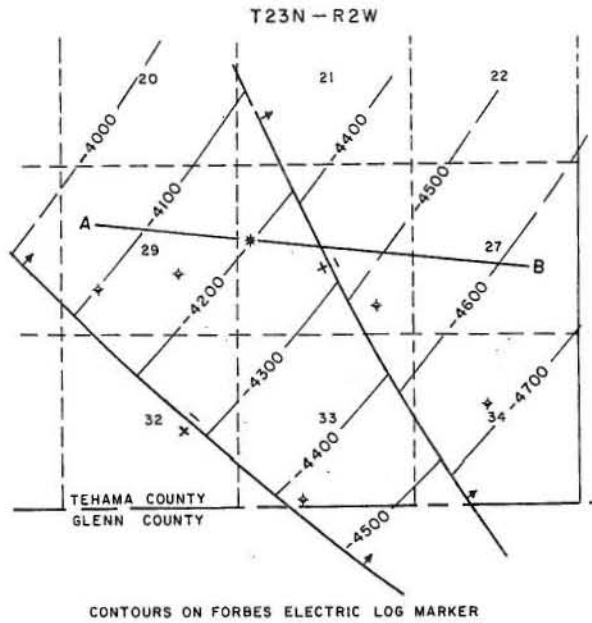
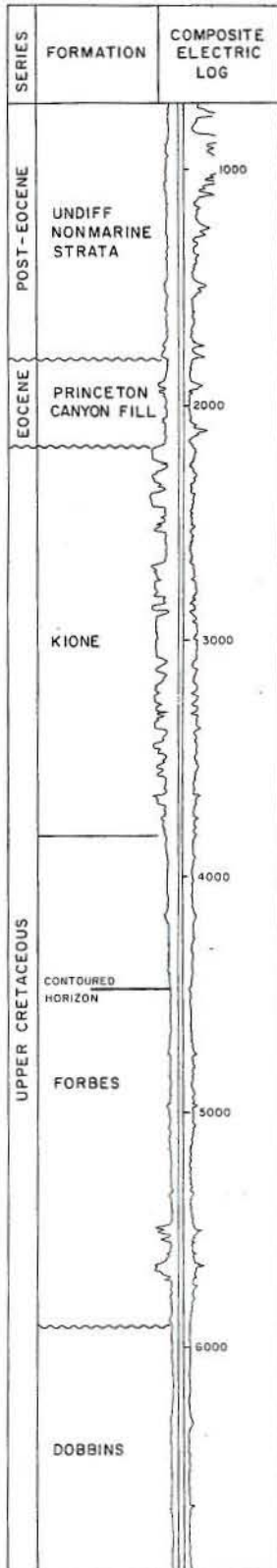
Base of fresh water (ft.): 1,450-1,700

Remarks: Commercial gas deliveries began in May 1964.

<sup>a/</sup> Combined rate, triple-string completion (three strings of 2 7/8" tubing cemented in hole).

Selected References: Hill, F. L., 1970, Rice Creek Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 56, No. 1.

# EAST RICE CREEK GAS FIELD



COUNTY: TEHAMA

RICE CREEK, EAST, GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Oxy Petroleum, Inc. "NRC-Bettencourt" 1	McFarland Energy, Inc. " NRC-Bettencourt"	28 23N 2W	MD	5,450	Forbes	Forbes Late Cretaceous
Deepest well	Same as above	1	"	"	"	"	"

POOL DATA

ITEM	FORBES					FIELD OR AREA DATA
Discovery date .....	December 1978					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,695					
Flow pressure (psi) .....	1,115					
Bean size (in.) .....	1/4					
Initial reservoir pressure (psi) .....	1,270					
Reservoir temperature (°F) .....	111					
Initial oil content (STB/ac.-ft.) .....	300-450					
Initial gas content (MSCF/ac.-ft.) .....	Forbes					
Formation .....	Late Cretaceous					
Geologic age .....	4,950					
Average depth (ft.) .....	16					
Average net thickness (ft.) .....	60					
Maximum productive area (acres) .....						

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	17-21†					
S <sub>oi</sub> (%) .....	45-55†					
S <sub>wj</sub> (%) .....	45-55†					
S <sub>gi</sub> (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.577					
Heating value (Btu/cu. ft.) .....	970					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

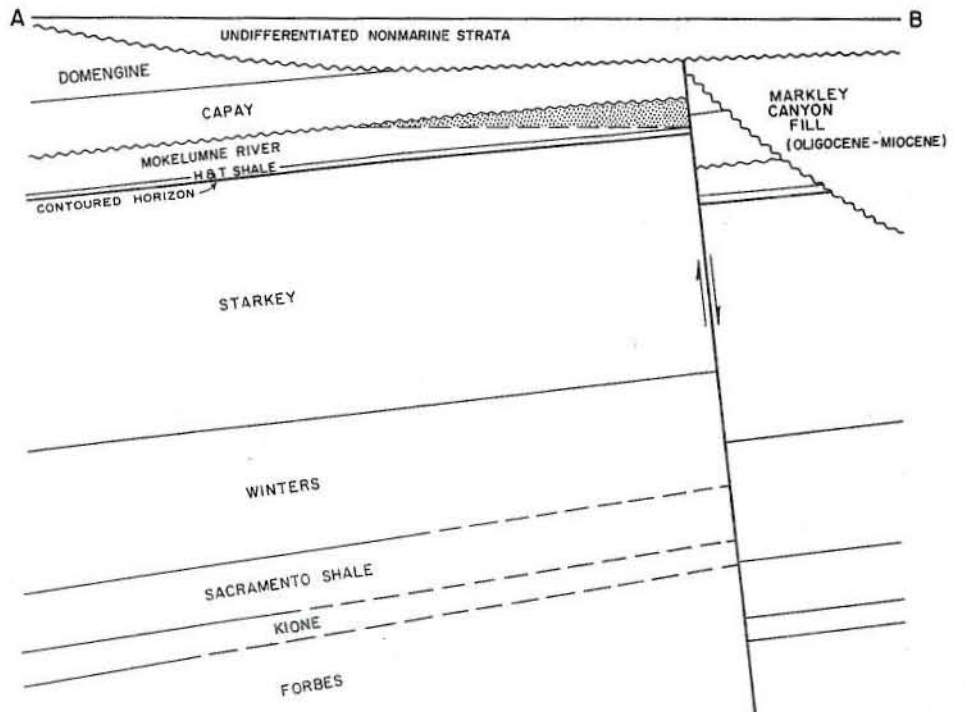
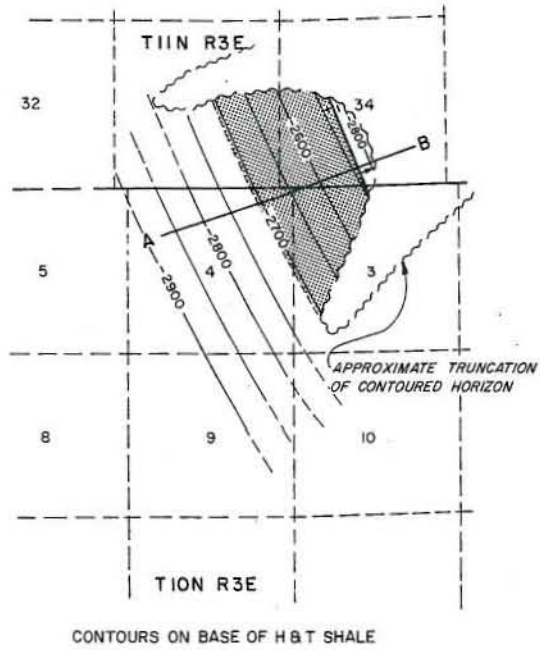
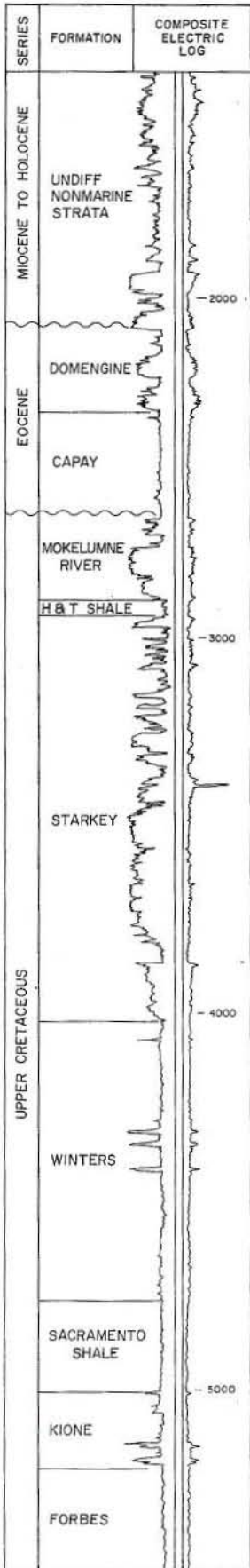
Base of fresh water (ft.): 1,600

Remarks: Commercial gas deliveries have not yet begun.

Selected References:



# RIO JESUS GAS FIELD



COUNTY: YOLO

RIO JESUS GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "Jesus-Maria" 1	Same as present	4 10N 3E	MD	4,504	Mokelumne River	Sacramento shale Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	POOL DATA					FIELD OR AREA DATA
	MOKELUMNE RIVER					
Discovery date .....	July 1972					
Initial production rates						
Oil (bbl/day) .....	3,394					
Gas (Mcf/day) .....	915					
Flow pressure (psi) .....	24/64					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,275					
Reservoir temperature (°F) .....	114					
Initial oil content (STB/ac.-ft.) .....	820-1,000					
Initial gas content (MSCF/ac.-ft.) .....	Mokelumne River					
Formation .....	Late Cretaceous					
Geologic age .....	2,470					
Average depth (ft.) .....	50					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	160					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	32-34†					
So <sub>g</sub> (%) .....	23-33†					
Sw <sub>g</sub> (%) .....	67-77†					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.607-.623††					
Heating value (Btu/cu. ft.) .....	864-884					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....	357,312					
Peak gas production, net (Mcf)						
Year .....	1979					

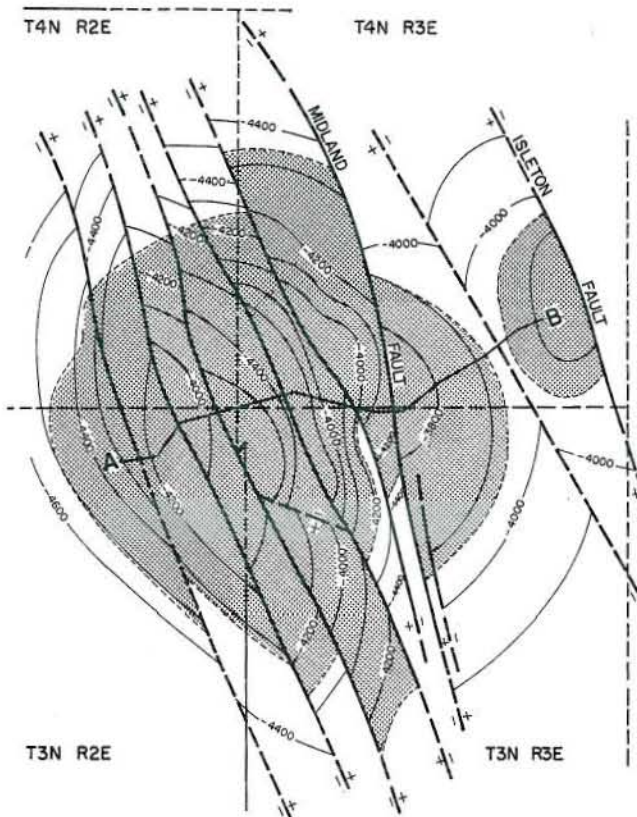
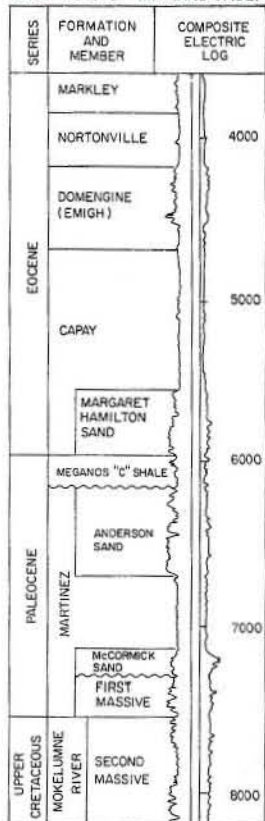
Base of fresh water (ft.): 1,000

Remarks: Commercial gas deliveries began in January 1977.

Selected References:

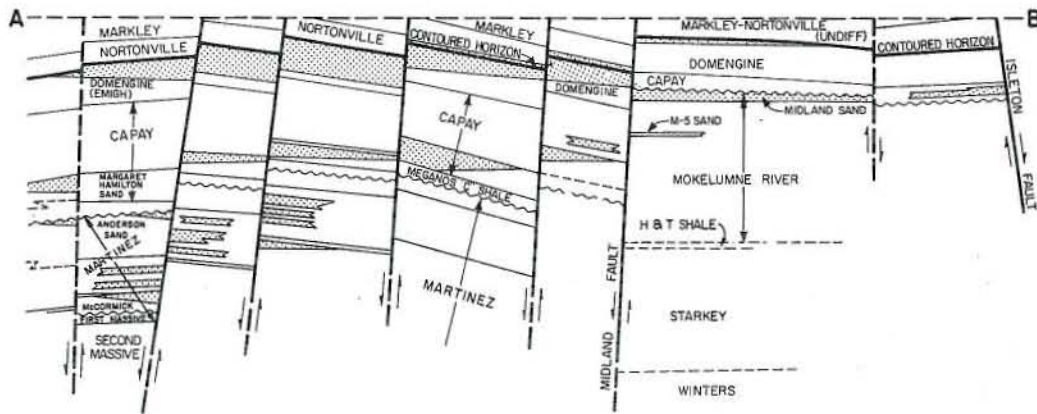
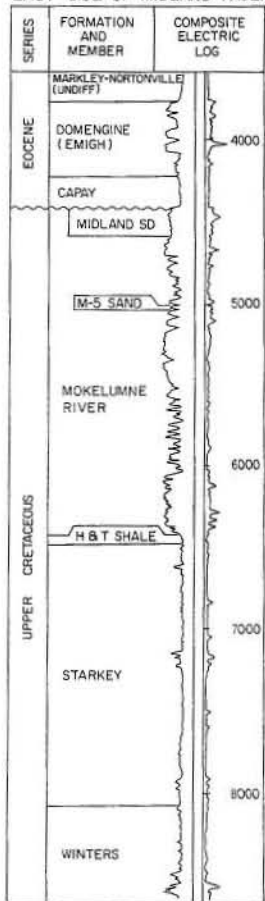
# RIO VISTA GAS FIELD

## WEST SIDE OF MIDLAND FAULT



CONTOURS ON TOP OF DOMENGINE

## EAST SIDE OF MIDLAND FAULT



COUNTY: CONTRA COSTA, SACRAMENTO and SOLANO

RIO VISTA GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess Corp., Unit Opr. "RVGU" 55	Amerada Petroleum Corp. of Calif. "Emigh"	26 4N 2E	MD	4,485	Emigh	
Deepest well	Chevron U.S.A. Inc. "Peter Cook" 15	Standard Oil Co. of Calif. "Peter Cook" 15	8 4N 3E	MD	15,050		Forbes Late Cretaceous

POOL DATA

ITEM	SIDNEY	MARKLEY	NORTONVILLE	EMIGH (Domengine)	CAPAY	FIELD OR AREA DATA
Discovery date .....	September 1977	September 1977	September 1950	June 1936	May 1948	
Initial production rates						
Oil (bbl/day) .....	1,490	1,274	190	8,750	3,010	
Gas (Mcf/day) .....	731	918	-	1,375	1,670	
Flow pressure (psi) .....	-	-	-	1/2	1/4	
Bean size (in.) .....	-	-	-	-	-	
Initial reservoir pressure (psi) .....	1,110	1,190	1,230	1,715-1,915	1,930	
Reservoir temperature (°F) .....	116	116	135	141-149	150	
Initial oil content (STB/ac-ft.) .....	500-690	560-740	700	1,200-1,300	800	
Initial gas content (MSCF/ac-ft.) .....	Markley	Markley	Nortonville	Domengine	Capay	
Formation .....	Eocene	Eocene	Eocene	Eocene	Eocene	
Geologic age .....	2,450	2,630	3,700-4,200	3,800-4,300	4,500-5,100	
Average depth (ft.) .....	50	24	25	40-315	20-40	
Average net thickness (ft.) .....						
Maximum productive area (acres) .....						25,000

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	25-32	26-32	30*	34	26*	
Soj (%) .....	35-40***	35-40***	35*	30	45*	
Swj (%) .....	60-65***	60-65***	65*	70	55*	
Permeability to air (md) .....	5-10	400-1,800	-	-	-	

RESERVOIR FLUID PROPERTIES

<b>Oil:</b>						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
<b>Gas:</b>						
Specific gravity (air = 1.0) .....	.580	.580	.595††	.580-.604††	.599††	
Heating value (Btu/cu. ft.) .....	1,009	1,009	1,010	1,000-1,050	1,060	
<b>Water:</b>						
Salinity, NaCl (ppm) .....	-	4,590	-	6,100-9,500	8,600-15,600	
T.D.S. (ppm) .....	-	4,703	-	-	-	
R <sub>w</sub> (ohm/m) (77°F) .....	-	1.36	-	-	-	

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						159,577,428
Year .....						1945

Base of fresh water (ft.): 1,900-2,900

Remarks: Commercial gas deliveries began in September 1937. Cumulative condensate production is 1,341,463 barrels. Effective January 1965, most of the field was unitized, with Amerada Petroleum Corp., Opr. (now Amerada Hess Corp., Unit Opr.) acting as unit operator.

Selected References: Burroughs, Ernest, 1967, Rio Vista Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 53, No. 2 - Part 2.  
Burroughs, Ernest, Beecroft, G. W., and Barger, R. M., 1968, Rio Vista Gas Field: Am. Assoc. Petroleum Geologists, Memoir No. 9, p. 93-101.

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well							
Deepest well							

POOL DATA

ITEM	POOL DATA					FIELD OR AREA DATA
	MARGARET HAMILTON	MIDLAND	M-5	ANDERSON	MARTINEZ	
Discovery date .....	November 1936	June 1943	August 1943	August 1944	October 1966	
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	4,160 $\frac{\Delta}{\Delta}$	5,700 $\frac{\Delta}{\Delta}$	13,340	11,700	4,250	
Flow pressure (psi) .....	290		1,635	2,145	1,810	
Bean size (in.) .....	3/4		5/8	1/2	3/8	
Initial reservoir pressure (psi) .....	2,415	2,060	2,210	2,550	2,550-3,000	
Reservoir temperature (°F) .....	167	153	153	177	177-187	
Initial gas content (STB/ac-ft.) .....						
Formation .....	1,100	1,300	1,100	1,600	920-1,400	
Geologic age .....	Capay	Mokelumne River	Mokelumne River	Martinez	Martinez	
Average depth (ft.) .....	Eocene	Late Cretaceous	Late Cretaceous	Paleocene	Paleocene	
Average net thickness (ft.) .....	5,300	4,500	5,050	5,750	5,800-6,900	
Maximum productive area (acres) .....	90	40-140	10	49	30-120	

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	27	33	25	31	22-28	
S <sub>oi</sub> (%) .....						
S <sub>wj</sub> (%) .....	40	35	30	25	35-40	
S <sub>gj</sub> (%) .....	60	65	70	75	60-65	
Permeability to air (md) .....					15-180	

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.599††	.616††	.583††	.601††	.596††	
Heating value (Btu/cu. ft.) .....	1,060	1,025	990	1,070	1,065	
Water:						
Salinity, NaCl (ppm) .....	15,400-18,800	11,000-14,000	11,300	10,100-24,000	15,400	
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.):

Remarks:

$\frac{\Delta}{\Delta}$  Open hole formation test.

Selected References: Corwin, C. H., 1953, Rio Vista Gas Field, Isleton Area: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 39, No. 1.  
Frame, R. G., 1944, Rio Vista Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 30, No. 1.

COUNTY: CONTRA COSTA, SACRAMENTO and SOLANO

RIO VISTA GAS FIELD  
Cont.....

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well							
Deepest well							

POOL DATA

ITEM	FIELD OR AREA DATA			
	MCCORMICK	PETERSEN		
Discovery date .....	October 1966	April 1966		
Initial production rates				
Oil (bbl/day) .....				
Gas (Mcf/day) .....	5,330	400		
Flow pressure (psi) .....	1,925	125		
Bean size (in.) .....	3/8	3/8		
Initial reservoir pressure (psi) .....	2,930	4,860		
Reservoir temperature (°F) .....	185-190	195		
Initial oil content (STB/ac.-ft.) .....				
Initial gas content (MSCF/ac.-ft.) .....	1,100-1,400	800-1,300		
Formation .....	Martinez	Starkey		
Geologic age .....	Paleocene	Late Cretaceous		
Average depth (ft.) .....	6,500-7,600	9,650		
Average net thickness (ft.) .....	50	55		
Maximum productive area (acres) .....				

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	24-28	14-20†		
Soj (%) .....				
Swj (%) .....	35-40	45-50†		
Sg <sub>i</sub> (%) .....	60-65	50-55†		
Permeability to air (md) .....	120			

RESERVOIR FLUID PROPERTIES

Oil:				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	.5991†	.6081†		
Heating value (Btu/cu. ft.) .....	1,060	1,080		
Water:				
Salinity, NaCl (ppm) .....	10,500-15,200	7,700		
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				

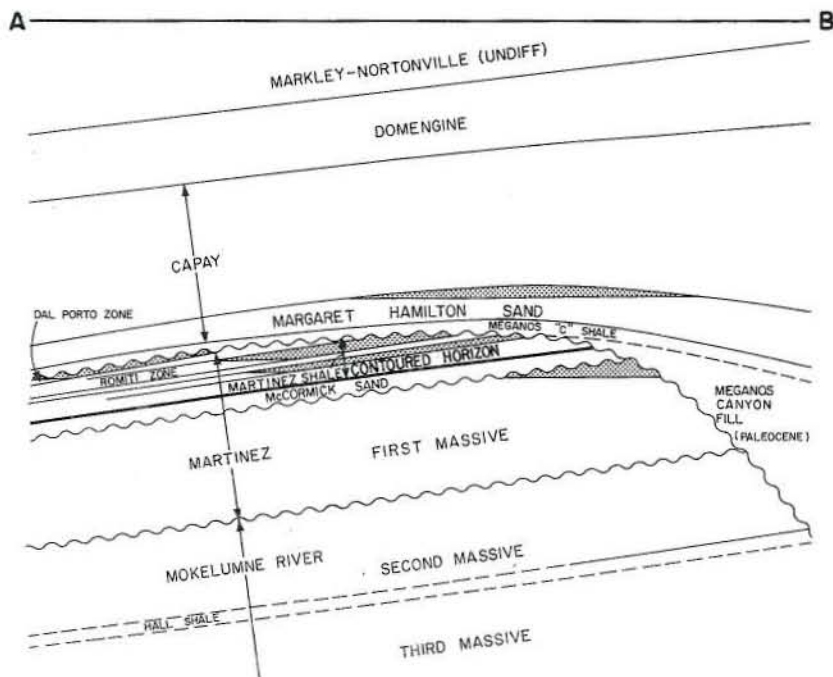
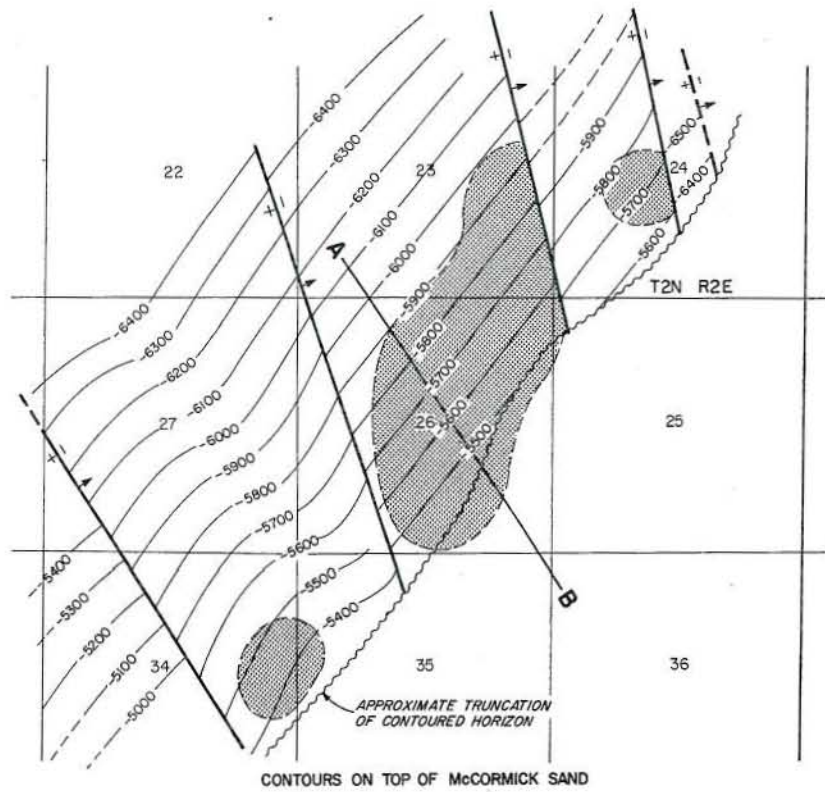
Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				
Year .....				

Base of fresh water (ft.):

Remarks:

Selected References: Railroad Commission of the State of Calif. and Calif. Div. of Oil and Gas, 1942, Rio Vista Gas Field in Estimate of Natural Gas Reserves of the State of Calif.: Case No. 4591, Special Study No. S-258, p. 245-251.  
Soper, E. K., 1943, Rio Vista Gas Field in Geologic Formations and Economic Development of the Oil and Gas Fields of Calif.: Calif. Div. of Mines Bull. 118, p. 591-594.

# RIVER BREAK GAS FIELD



SERIES	FORMATION & MEMBER	COMPOSITE ELECTRIC LOG
Eocene	MARKLEY-NORTONVILLE (UNDIFF)	3000
	DOMENGINE	
	CAPAY	
	MARGARET HAMILTON SAND	
PALEOCENE	MEGANGS C' SHALE	4000
	MARTINEZ SHALE	
	McCORMICK SAND	
	MARTINEZ	
UPPER CRETACEOUS	FIRST MASSIVE	6000
	SECOND MASSIVE	
	HALL SHALE	
	THIRD MASSIVE	
		7000

COUNTY: CONTRA COSTA

RIVER BREAK GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Gulf Oil Corp. "Sesnon-Gulf" 1	Helm Co. & Robt. Sumpf "Sesnon-Gulf" 1	24 2N 2E	MD	6,924	Dal Porto	
Deepest well	Western Continental Operating Co. "Audrey Smith" 1	Same as present	35 2N 2E	MD	11,643		Confidential

POOL DATA

ITEM	HAMILTON	DAL PORTO	ROMITI	FIRST MASSIVE	FIELD OR AREA DATA
Discovery date .....	June 1968	December 1964	January 1968	June 1968	
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	1,645	17,000	3,590	3,190	
Flow pressure (psi) .....	1,470	1,830	1,750	1,910	
Bean size (in.) .....	15/64	5/8	20/64	18/64	
Initial reservoir pressure (psi) .....	2,220	2,500	2,500	2,520	
Reservoir temperature (°F) .....	125	126	126	126	
Initial oil content (STB/ac.-ft.) .....	900	1,000	1,000	940	
Initial gas content (MSCF/ac.-ft.) .....	Capay	Meganos	Martinez	Martinez	
Formation .....	Eocene	Paleocene	Paleocene	Paleocene	
Geologic age .....	5,015	5,450	5,540	5,660	
Average depth (ft.) .....	30	40	25	60	
Average net thickness (ft.) .....					
Maximum productive area (acres) .....					770

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	24	23*	23	22	
Soj (%) .....	42	42*	42	44	
Swj (%) .....	58	58*	58	56	
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.586	-	-	.586	
Heating value (Btu/cu. ft.) .....	1,060	1,020	1,020	1,100	
Water:					
Salinity, NaCl (ppm) .....	-	-	-	7,000	
T.D.S. (ppm) .....	-	7,026	-	-	
R <sub>w</sub> (ohm/m) (77°F) .....	-	1.05	-	-	

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

Peak oil production (bbl) Year .....					
Peak gas production, net (Mcf) Year .....					1,648,021 1971

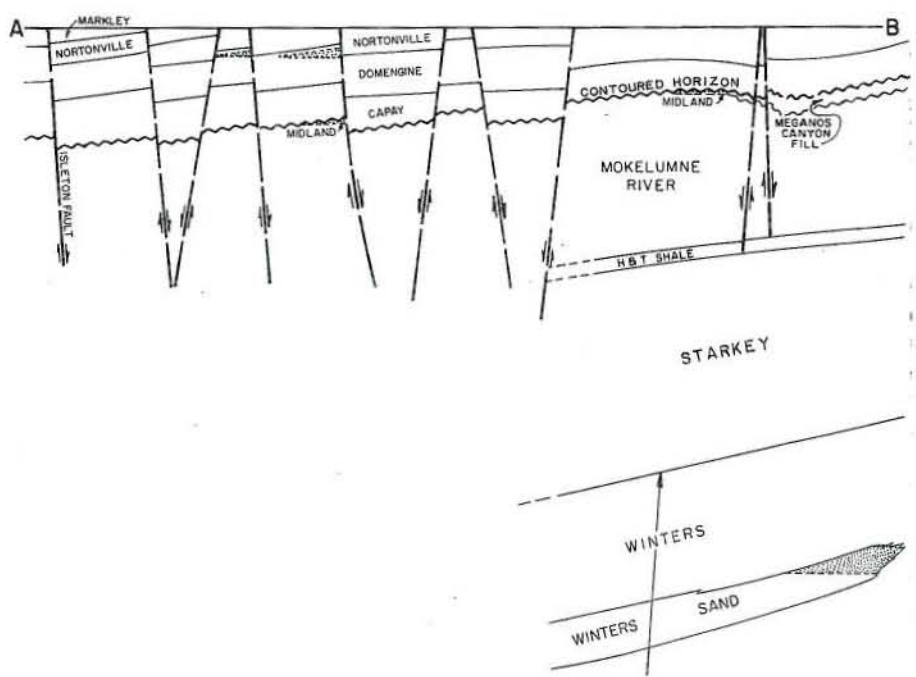
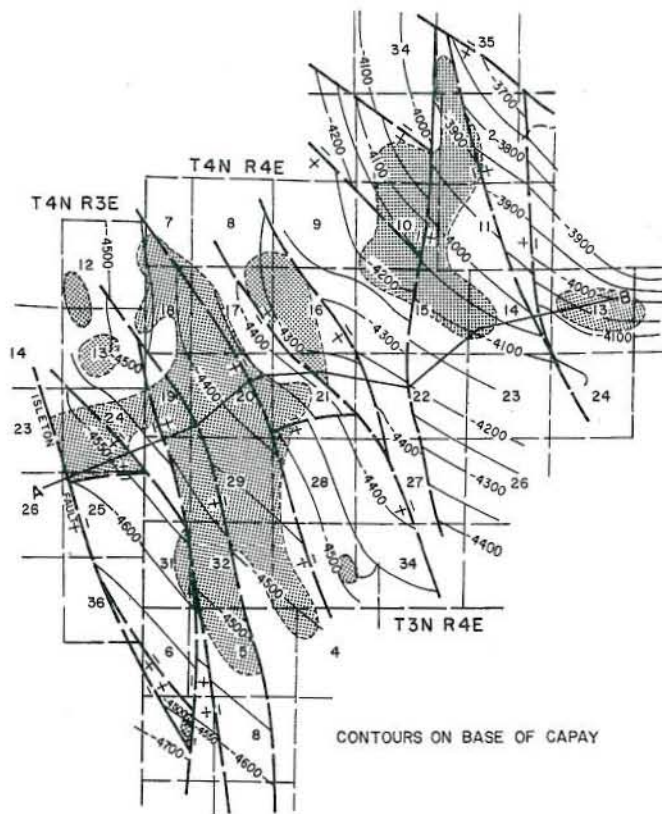
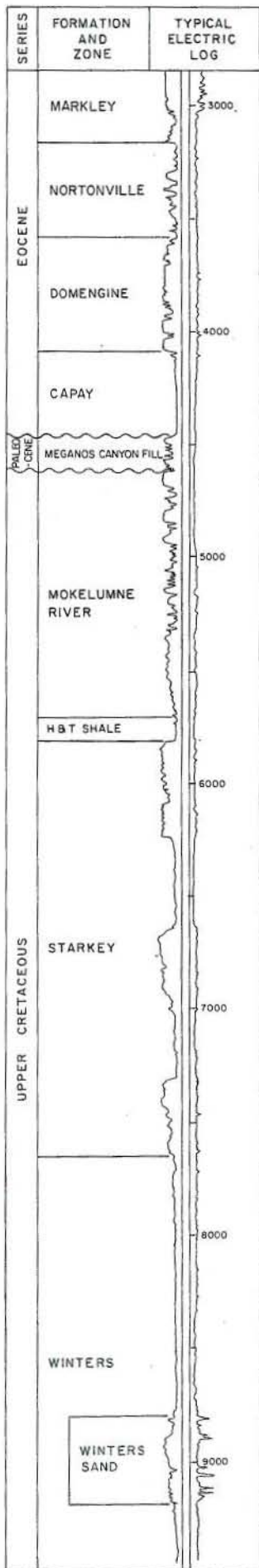
Base of fresh water (ft.): 250

Remarks: Commercial gas deliveries began in December 1966.

Selected References: Williams, P. A., 1972, River Break Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 58, No. 1.



# RIVER ISLAND GAS FIELD



COUNTY: SACRAMENTO and SAN JOAQUIN

RIVER ISLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Union Oil Company of California "River Islands Land Co." 1	Brazos Oil and Gas Co. "River Islands Land Co." 1	29 4N 4E	MD	5,158	Domengine	
Deepest well	Union Oil Company of California "S.R. Unit 1" 1	Brazos Oil and Gas Co. "S.R. Unit 1" 1	17 4N 4E	MD	10,902	unnamed	Winters Late Cretaceous

POOL DATA

ITEM	POOL DATA					FIELD OR AREA DATA
	MARKLEY	NORTONVILLE	DOMENGINE	CAPAY	MIDLAND	
Discovery date .....	June 1963	October 1953	June 1950	August 1957	September 1950	
Initial production rates						
Oil (bbl/day) .....	2,200	4,000	4,100	1,985	1,770	
Gas (Mcf/day) .....	1,550	1,000	1,050	1,230	1,705	
Flow pressure (psi) .....	1/4	20/64	3/8	1/4	3/8	
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,285	1,780	1,860	1,760	1,940	
Reservoir temperature (°F) .....	100	106	107	113	114	
Initial oil content (STB/ac.-ft.) .....	630-840	900-1,200	1,000-1,300	900-1,300	1,100-1,400	
Initial gas content (MSCF/ac.-ft.) .....	Markley	Nortonville	Domengine	Capay	Mokelumne River	
Formation .....	Eocene	Eocene	Eocene	Eocene	Late Cretaceous	
Geologic age .....	3,110	3,600	3,730	4,230	4,350	
Average depth (ft.) .....	5	5	20	20	40	
Average net thickness (ft.) .....						4,910
Maximum productive area (acres) .....						

RESERVOIR ROCK PROPERTIES

	MARKLEY	NORTONVILLE	DOMENGINE	CAPAY	MIDLAND	
Porosity (%) .....	26-32	26-31	28-32	27-33	29-34	
So <sub>g</sub> (%) .....	35-40	35-40	30-40	30-40	35-40	
Sw <sub>g</sub> (%) .....	60-65	60-65	60-70	60-70	60-65	
Sg <sub>g</sub> (%) .....	-	340	-	-	-	
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

	MARKLEY	NORTONVILLE	DOMENGINE	CAPAY	MIDLAND	
<b>Oil:</b>						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
<b>Gas:</b>						
Specific gravity (air = 1.0) .....	.576	.574	.565††	.574	.576	
Heating value (Btu/cu. ft.) .....	970	1,010	1,005	1,010	970	
<b>Water:</b>						
Salinity, NaCl (ppm) .....	1,200	1,700-6,800	1,700-7,000	4,500-7,700	9,400	
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects.....	MARKLEY	NORTONVILLE	DOMENGINE	CAPAY	MIDLAND	
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						7,394,699
Year .....						1969

Base of fresh water (ft.): 100-2,000

Remarks: Commercial gas deliveries began in October 1950. Several of the gas-sand stringers within the producing zones have been given local names by operators.

Selected References: Corwin, C. H., 1953, River Island Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 39, No. 1.

COUNTY: SACRAMENTO and SAN JOAQUIN

RIVER ISLAND GAS FIELD  
Cont.....

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well							
Deepest well							

POOL DATA

ITEM	POOL DATA				FIELD OR AREA DATA
	INNAMED	WINTERS			
Discovery date .....	December 1958	August 1963			
Initial production rates					
Oil (bbl/day) .....	2,800	7,000			
Gas (Mcf/day) .....	1,850	2,550			
Flow pressure (psi) .....	1/4	20/64			
Bean size (in.) .....					
Initial reservoir pressure (psi) .....	2,060-2,400	3,955			
Reservoir temperature (°F) .....	119-128	163			
Initial oil content (STB/ac.-ft.) .....	1,200-1,400	1,600-1,800			
Initial gas content (MSCF/ac.-ft.) .....	Mokelumne River	Winters			
Formation .....	Late Cretaceous	Late Cretaceous			
Geologic age .....	4,700-5,500	8,450			
Average depth (ft.) .....	5-40	30			
Average net thickness (ft.) .....					
Maximum productive area (acres) .....					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	26-32	26			
So <sub>i</sub> (%) .....	35-40	35-40			
Sw <sub>i</sub> (%) .....	60-65	60-65			
Sg <sub>i</sub> (%) .....					
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

<b>Oil:</b>					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
<b>Gas:</b>					
Specific gravity (air = 1.0) .....	.570††	.576			
Heating value (Btu/cu. ft.) .....	985	970			
<b>Water:</b>					
Salinity, NaCl (ppm) .....	4,800				
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

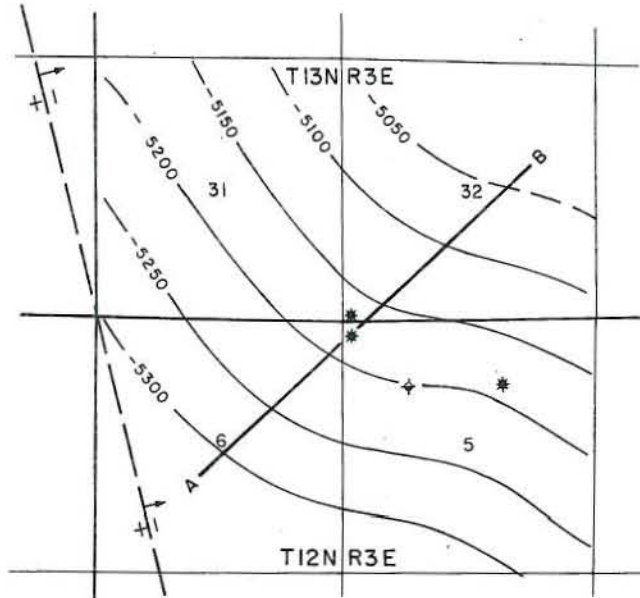
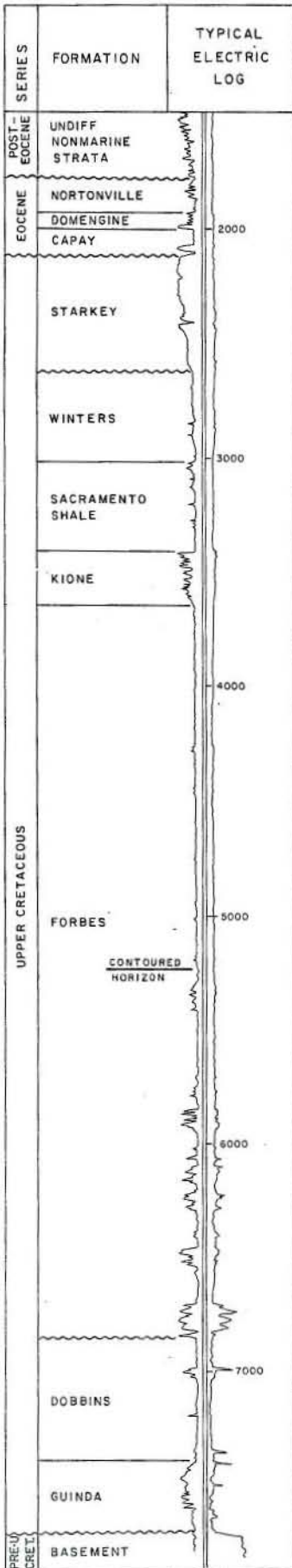
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					

Base of fresh water (ft.):

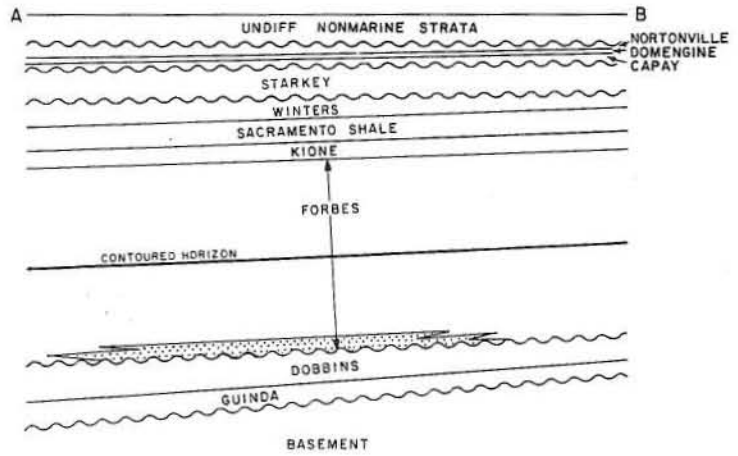
Remarks:

Selected References:

# ROBBINS GAS FIELD



CONTOURS ON FORBES ELECTRIC LOG MARKER



COUNTY: SUTTER

ROBBINS GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Sutter Gas Co. "Sutter Gas Company" 1	Same as present	32 13N 3E	MD	7,405	Forbes	
Deepest well	Drilling and Exploration Co., Inc. "Magoon Estate, Ltd." 1	Same as present	5 12N 3E	MD	7,631		basement pre-Lt. Cret.

POOL DATA

ITEM	FORBES					FIELD OR AREA DATA
Discovery date .....	January 1979					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	5,000					
Flow pressure (psi) .....	2,200					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	2,964					
Reservoir temperature (°F) .....	167					
Initial oil content (STB/ac-ft.) .....						
Initial gas content (MSCF/ac-ft.) .....	590-890					
Formation .....	Forbes					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	7,100					
Average net thickness (ft.) .....	75					
Maximum productive area (acres) .....	40					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	17-23†					
So <sub>i</sub> (%) .....	45-50†					
Sw <sub>i</sub> (%) .....	50-55†					
Sg <sub>i</sub> (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.913					
Heating value (Btu/cu. ft.) .....	141					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

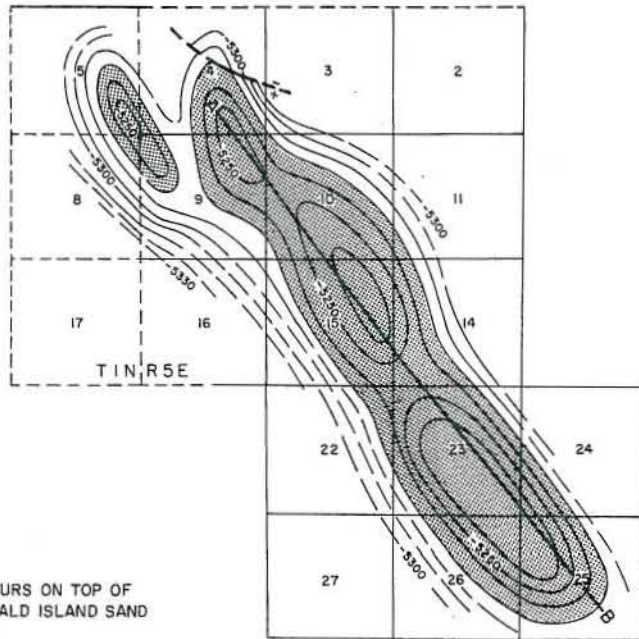
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 500-700

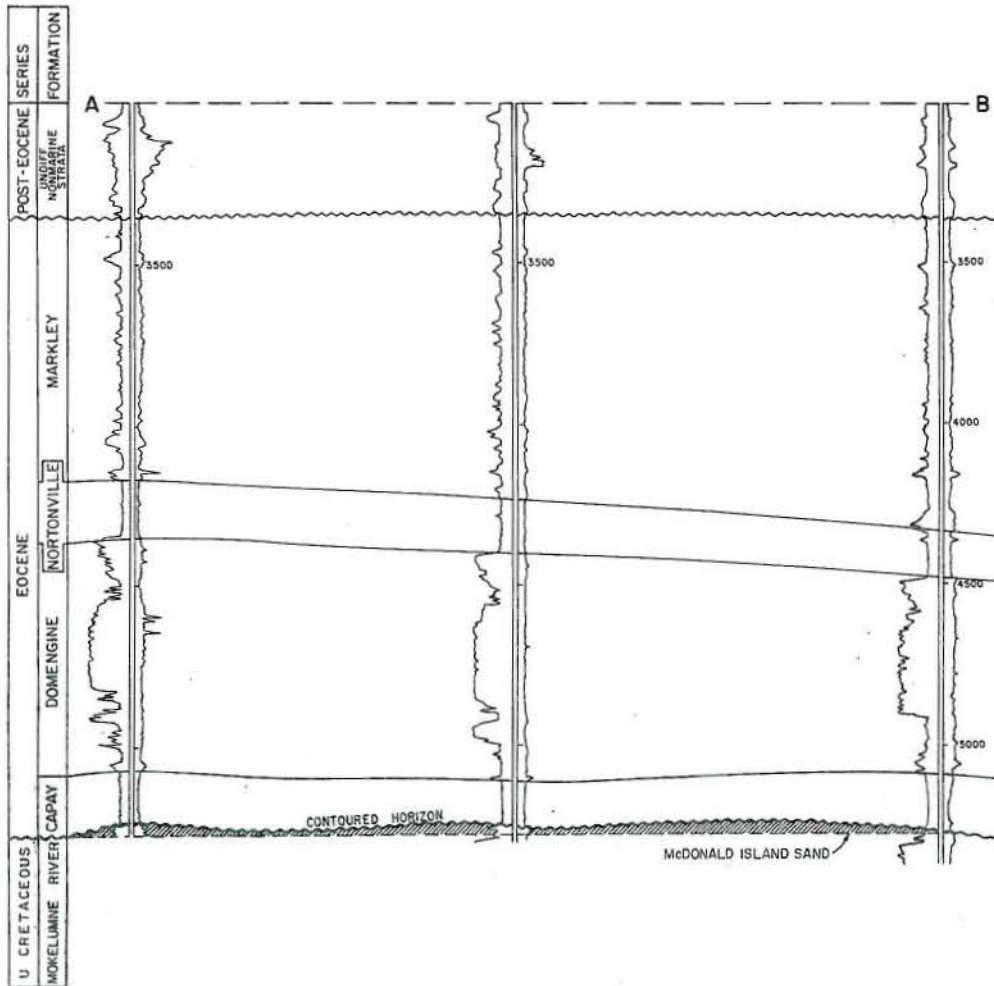
Remarks: Commercial gas deliveries have not yet begun. In March 1961, Drilling and Exploration Co., Inc. "Magoon Estate, Ltd." 1 was tested over the interval 6,659 - 6,687 feet; initial daily production was 3,000 Mcf, flow pressure 1950 psi, 7/16-inch bean. The gas would not burn; a sample was analyzed and found to contain 88% nitrogen.

Selected References:

# ROBERTS ISLAND GAS FIELD



CONTOURS ON TOP OF  
McDONALD ISLAND SAND



COUNTY: SAN JOAQUIN

ROBERTS ISLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Arcady Oil Co. "Woods Community 2" 1	Standard Oil Co. of Calif. "Woods Community 2" 1	23 1N 5E	MD	5,254	McDonald Island sand	
Deepest well	Chevron U.S.A. Inc. "Woods Community" 2-5	Standard Oil Co. of Calif. "Woods Community" 2-5	26 1N 5E	MD	11,426		Panoche Late Cretaceous

POOL DATA

ITEM	McDONALD ISLAND SAND		UNNAMED				FIELD OR AREA DATA
Discovery date .....	August 1942	May 1974					
Initial production rates							
Oil (bbl/day) .....							
Gas (Mcf/day) .....	5,610	2,030					
Flow pressure (psi) .....	1,765	2,317					
Bean size (in.) .....	3/8	3/16					
Initial reservoir pressure (psi) .....	2,340	2,750					
Reservoir temperature (°F) .....	127	139					
Initial oil content (STB/ac.-ft.) .....							
Initial gas content (MSCF/ac.-ft.) .....	1,500-1,800	1,600-1,900					
Formation .....	Mokelumne River	Mokelumne River					
Geologic age .....	Late Cretaceous	Late Cretaceous					
Average depth (ft.) .....	5,250	6,301					
Average net thickness (ft.) .....	10	3					
Maximum productive area (acres) .....							1,730

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	29-33***	29-33***					
So <sub>g</sub> (%) .....	25-30***	25-30***					
Sw <sub>g</sub> (%) .....	70-75***	70-75***					
Sg <sub>g</sub> (%) .....							
Permeability to air (md) .....							

RESERVOIR FLUID PROPERTIES

Oil:							
Oil gravity (°API) .....							
Sulfur content (% by wt.) .....							
Initial solution GOR (SCF/STB) .....							
Initial oil FVF (RB/STB) .....							
Bubble point press. (psia) .....							
Viscosity (cp) @ °F .....							
Gas:							
Specific gravity (air = 1.0) .....	.578††	.620††					
Heating value (Btu/cu. ft.) .....	955	861					
Water:							
Salinity, NaCl (ppm) .....	5,000-12,000						
T.D.S. (ppm) .....							
R <sub>w</sub> (ohm/m) (77°F) .....							

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....							
Date started .....							
Date discontinued .....							

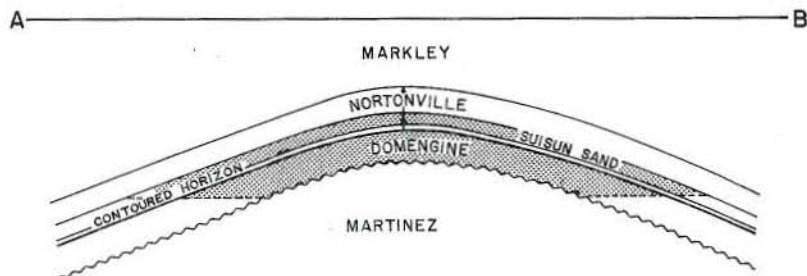
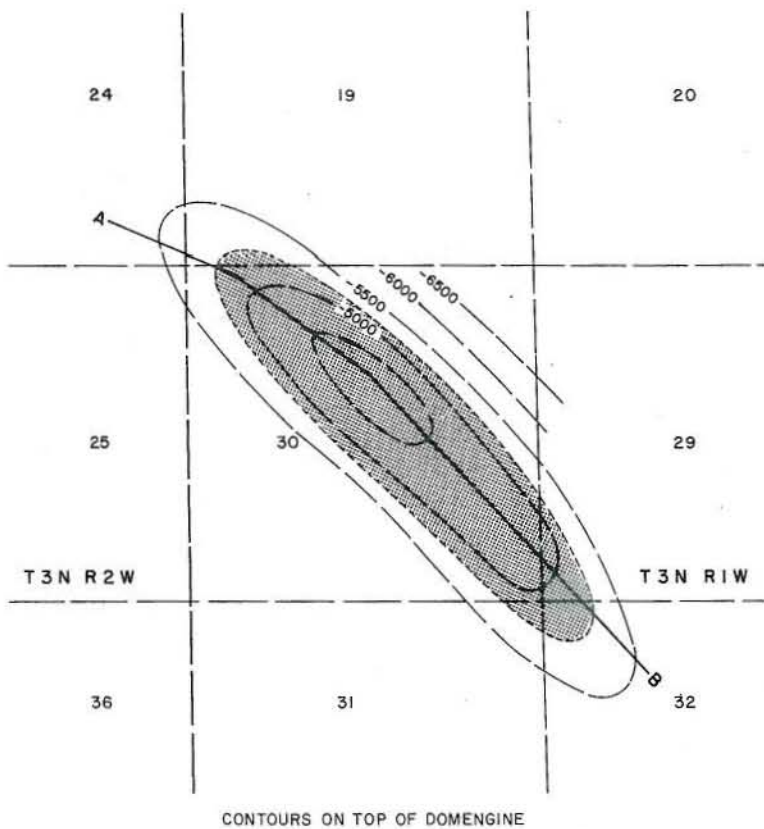
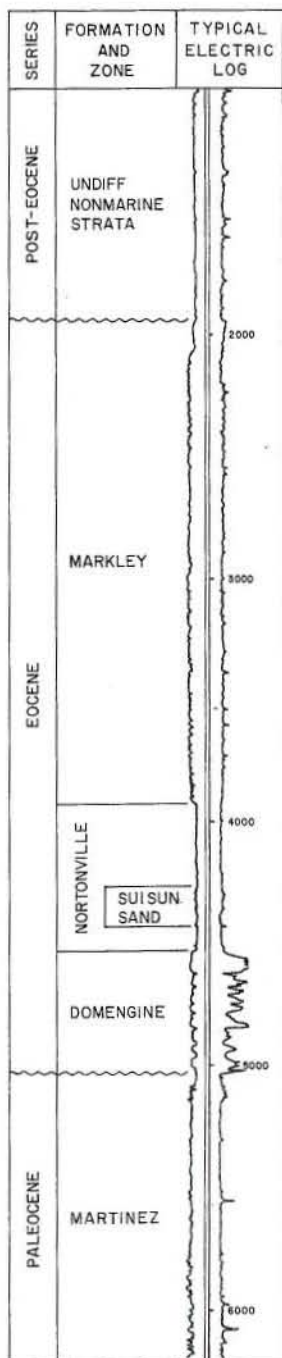
Peak oil production (bbl)							
Year .....							
Peak gas production, net (Mcf)							5,237,588
Year .....							1960

Base of fresh water (ft.): 75

Remarks: The northwest portion of the field was formerly known as the Whiskey Slough area. Commercial gas deliveries began in October 1942.

Selected References: Huey, W. F., 1958, Roberts Island Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 44, No. 1.

# RYER ISLAND GAS FIELD



COURTESY OF CHEVRON U.S.A., INC.



COUNTY: SOLANO

RYER ISLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron U.S.A. Inc. "Ryer" 1	Standard Oil Co. of Calif. "S.O. Oper.-Ryer" 1	30 3N 1W	MD	8,942	Suisun and Domengine	Martinet Paleocene
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

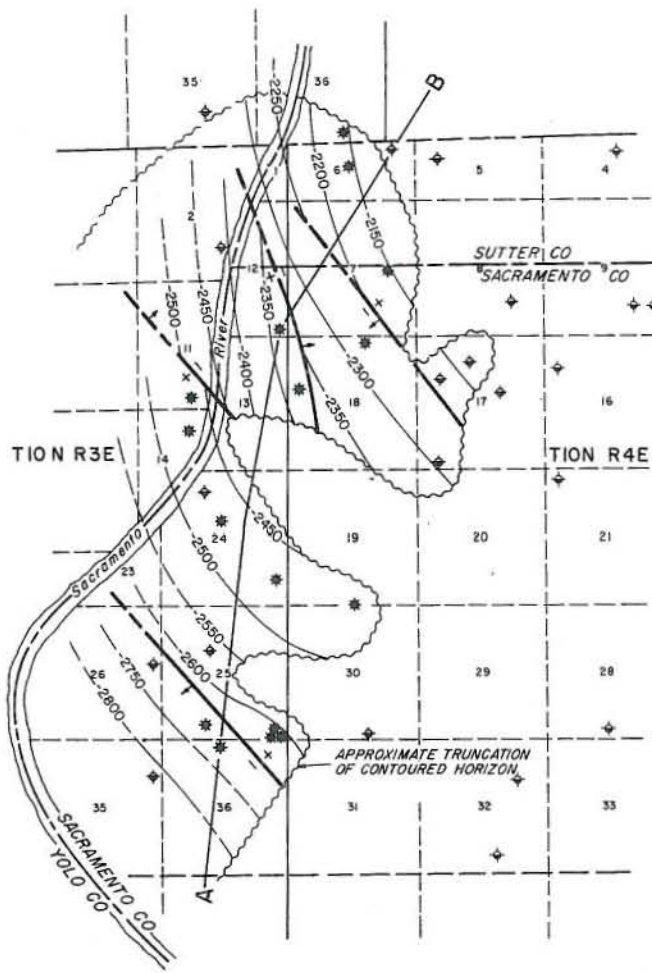
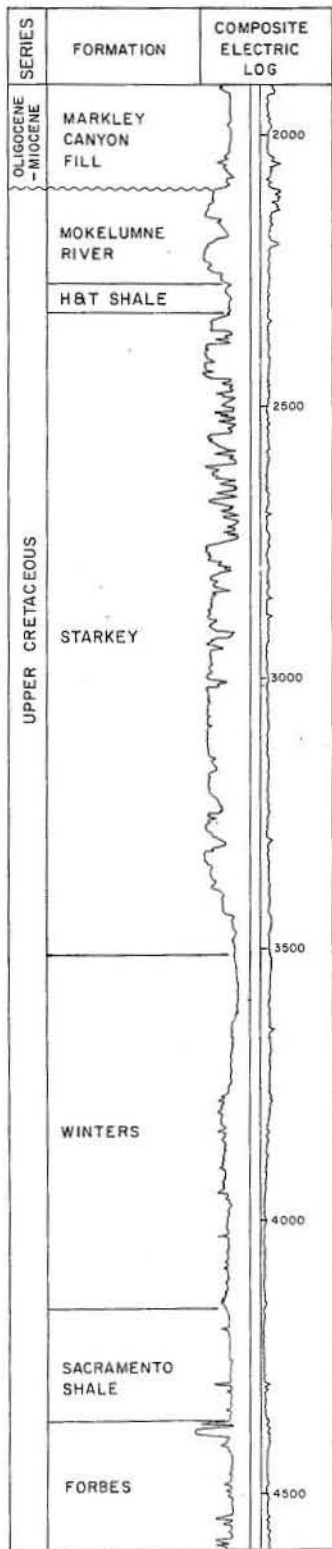
ITEM	POOL DATA				FIELD OR AREA DATA
	SUISUN	DOMENGINE			
Discovery date .....	July 1967	July 1967			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	5,875	11,545			
Flow pressure (psi) .....	1,505	1,725			
Bean size (in.) .....	1/2	1/2			
Initial reservoir pressure (psi) .....	2,410	2,405			
Reservoir temperature (°F) .....	130	135			
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	970	1,500			
Formation .....	Nortonville	Domengine			
Geologic age .....	Eocene	Eocene			
Average depth (ft.) .....	4,470	4,750			
Average net thickness (ft.) .....	60	200			
Maximum productive area (acres) .....					400
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	20	24			
Soj (%) .....					
Swj (%) .....	35	30			
Sgi (%) .....	65	70			
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.600††	.610††			
Heating value (Btu/cu. ft.) .....	1,070	1,100			
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					13,437,832 1973

Base of fresh water (ft.): 1,100

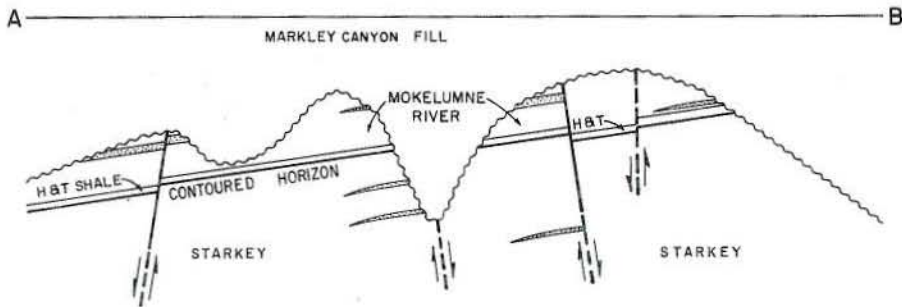
Remarks: There are seven wells in the field of which five are classified as onshore wells and two as offshore wells. The offshore wells and one onshore well were drilled from platforms. Cumulative condensate production is 118,139 barrels.

Selected References:

# SACRAMENTO AIRPORT GAS FIELD



CONTOURS ON TOP OF STARKEY



COUNTY: SACRAMENTO, SUTTER and YOLO

SACRAMENTO AIRPORT GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "Silva-Betts" 1-25	Same as present	25 10N 3E	MD	3,062 <sup>a/</sup>	Mokelumne River	
Deepest well	Buttes Resources Co. "Natomas" 3	Buttes Gas and Oil Co. "Natomas" 3	6 10N 4E	MD	4,500		Forbes Late Cretaceous

POOL DATA

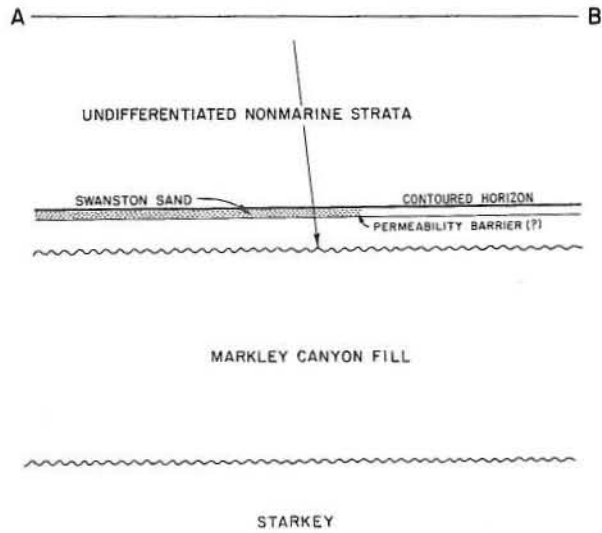
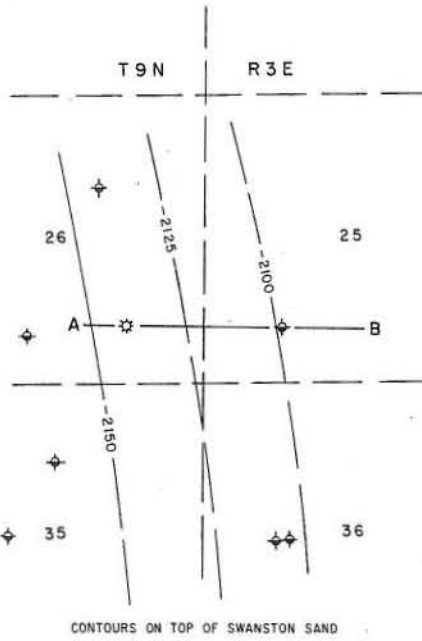
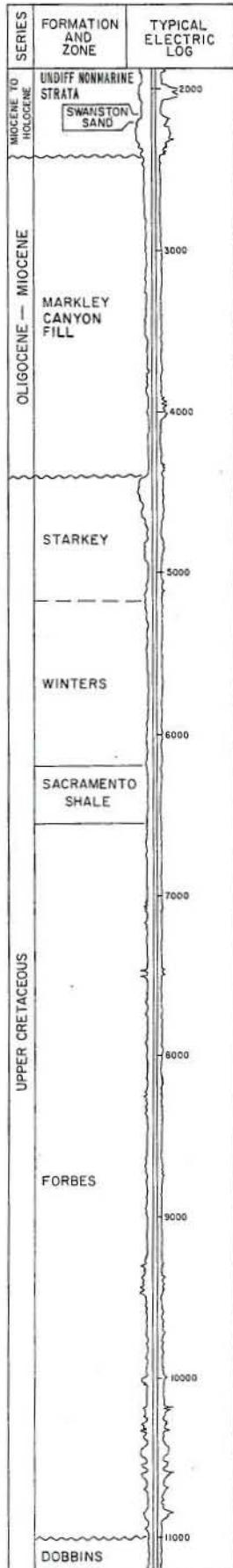
ITEM	POOL DATA				FIELD OR AREA DATA
	MOKELUMNE RIVER	STARKEY			
Discovery date .....	November 1973	January 1974			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	235	170-210			
Flow pressure (psi) .....	1,000	1,080-1,250			
Bean size (in.) .....					
Initial reservoir pressure (psi) .....	1,080	1,200-1,330			
Reservoir temperature (°F) .....	96	101-104			
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	460-850	600-910			
Formation .....	Mokelumne River	Starkey			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	2,200	2,600-2,900			
Average net thickness (ft.) .....	23	12-15			
Maximum productive area (acres) .....					1,620
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	29-35†	28-33†			
So <sub>g</sub> (%) .....	26-50†	24-45†			
Sw <sub>g</sub> (%) .....	50-74†	55-76†			
Permeability to air (md) .....		50-100			
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.617-.717	.632-.720			
Heating value (Btu/cu. ft.) .....	619-863	611-827			
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbf)					
Year .....					
Peak gas production, net (Mcf)					1,808,396
Year .....					1978

Base of fresh water (ft.): 1,400-1,700

Remarks: Commercial gas deliveries began in January 1977.  
<sup>a/</sup> Directional well; true vertical depth is 2,998 feet.

Selected References:

# SACRAMENTO BYPASS GAS FIELD (Abandoned)



COUNTY: YOLO

SACRAMENTO BYPASS GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Supreme Oil and Gas Corp. "Swanston" 1	Phillips Petroleum Co. "Swanston" 1	26 9N 3E	MD	11,194	Swanston	Dobbins Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	SWANSTON					FIELD OR AREA DATA
Discovery date .....	November 1961					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,150					
Flow pressure (psi) .....	760					
Bean size (in.) .....	1/4					
Initial reservoir pressure (psi) .....	925					
Reservoir temperature (°F) .....	86					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	600					
Formation .....	undiff. nonmarine					
Geologic age .....	Miocene to Holocene					
Average depth (ft.) .....	2,160					
Average net thickness (ft.) .....	8					
Maximum productive area (acres) .....	40					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	30**					
So <sub>i</sub> (%) .....						
Sw <sub>i</sub> (%) .....	30**					
Sg <sub>i</sub> (%) .....	70**					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution						
GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.621††					
Heating value (Btu/cu. ft.) .....	850					
Water:						
Salinity, NaCl (ppm) .....	1,000					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

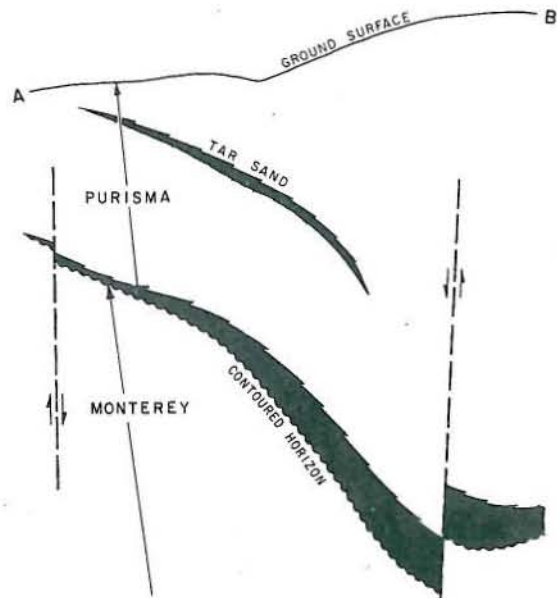
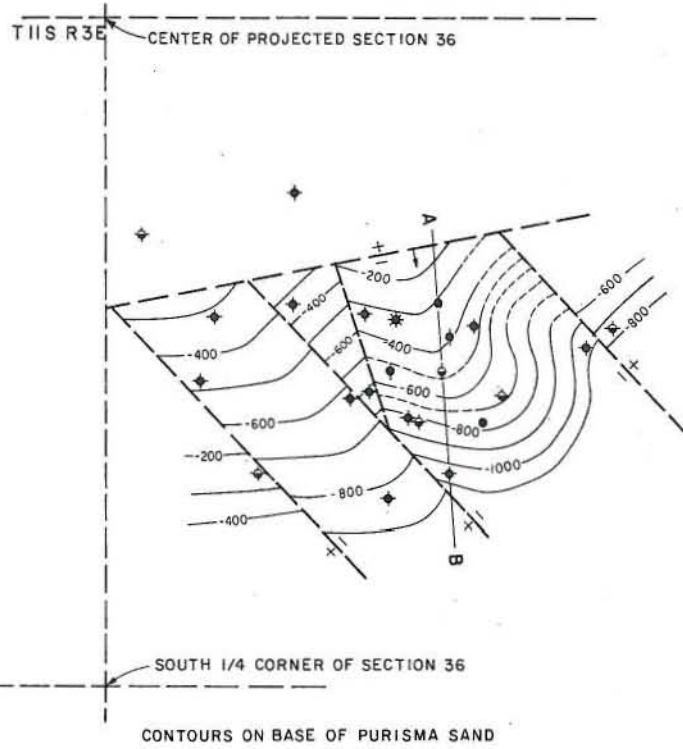
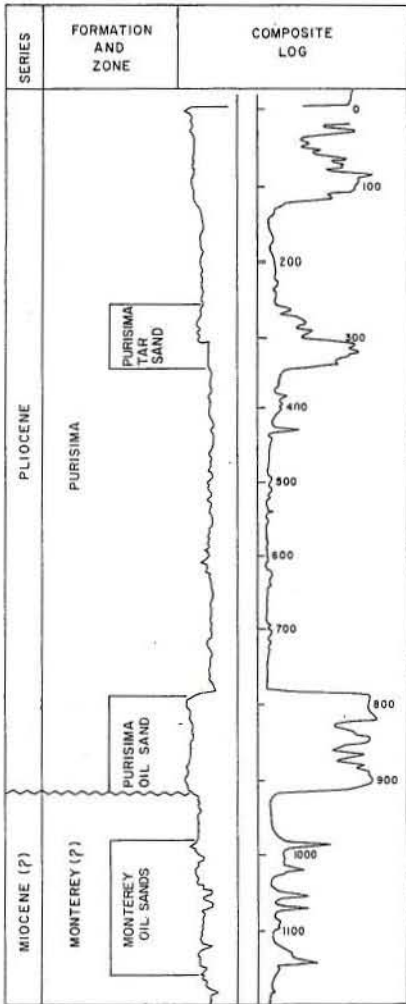
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....	1,201					
	1967					

Base of fresh water (ft.): 2,100

Remarks: The well produced gas from December 1967 to April 1968. The field was abandoned in June 1974. Only one well was completed and cumulative gas production was 2,179 Mcf.

Selected References:

# SARGENT OIL FIELD



COUNTY: SANTA CLARA

**SARGENT OIL FIELD**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Sargent Oil Co. No. 1	Watsonville Oil Co. No. 1	36 11S 3E	MD	1,620	Tar, Purisima, and Monterey	
Deepest well	Occidental Petroleum Corp. "Sargent" 1	Same as present	36 11S 3E	MD	6,972		Monterey Miocene

**POOL DATA**

ITEM	POOL DATA			FIELD OR AREA DATA
	TAR	PURISIMA	MONTEREY	
Discovery date .....	1906	1906	1906	
Initial production rates				
Oil (bbl/day) .....				
Gas (Mcf/day) .....				
Flow pressure (psi) .....				
Bean size (in.) .....				
Initial reservoir pressure (psi) .....	-	-	Hydrostatic	
Reservoir temperature (°F) .....				
Initial oil content (STB/ac.-ft.) .....				
Initial gas content (MSCF/ac.-ft.) .....				
Formation .....	Purisima Pliocene	Purisima Pliocene	Monterey Miocene	
Geologic age .....	300	600	850-1,100	
Average depth (ft.) .....	75	130	30-50	
Average net thickness (ft.) .....				
Maximum productive area (acres) .....				70

**RESERVOIR ROCK PROPERTIES**

Porosity (%) .....	-	35		
So <sub>g</sub> (%) .....				
Sw <sub>i</sub> (%) .....				
Sg <sub>g</sub> (%) .....	-	217		
Permeability to air (md) .....				

**RESERVOIR FLUID PROPERTIES**

<b>Oil:</b>				
Oil gravity (*API) .....	10	16-25	17	
Sulfur content (% by wt.) .....	-	.62	-	
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ *F .....	-	215	-	
<b>Gas:</b>				
Specific gravity (air = 1.0) .....				
Heating value (Btu/cu. ft.) .....				
<b>Water:</b>				
Salinity, NaCl (ppm) .....	-	20,600	-	
T.D.S. (ppm) .....	-	22,977	-	
R <sub>w</sub> (ohm/m) (77°F) .....	-	0.29	-	

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects .....		cyclic steam		
Date started .....		October 1967		
Date discontinued .....		November 1967		

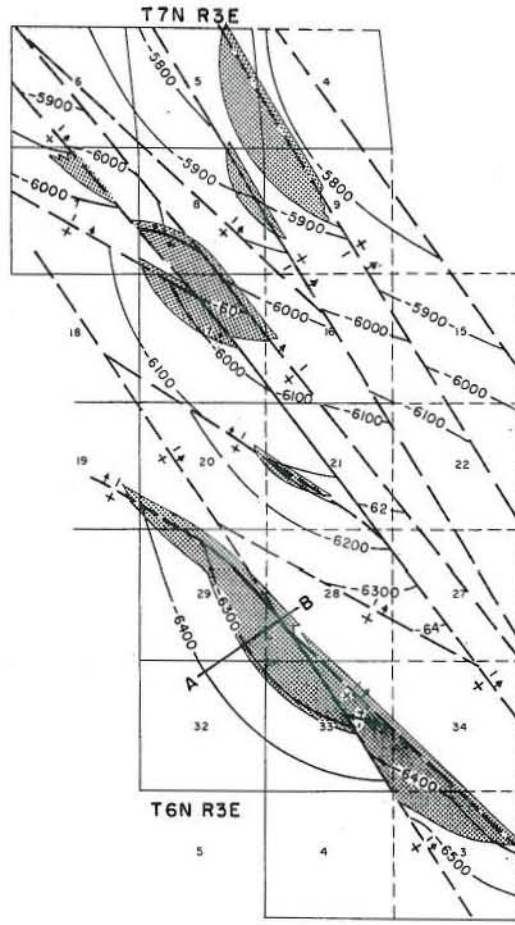
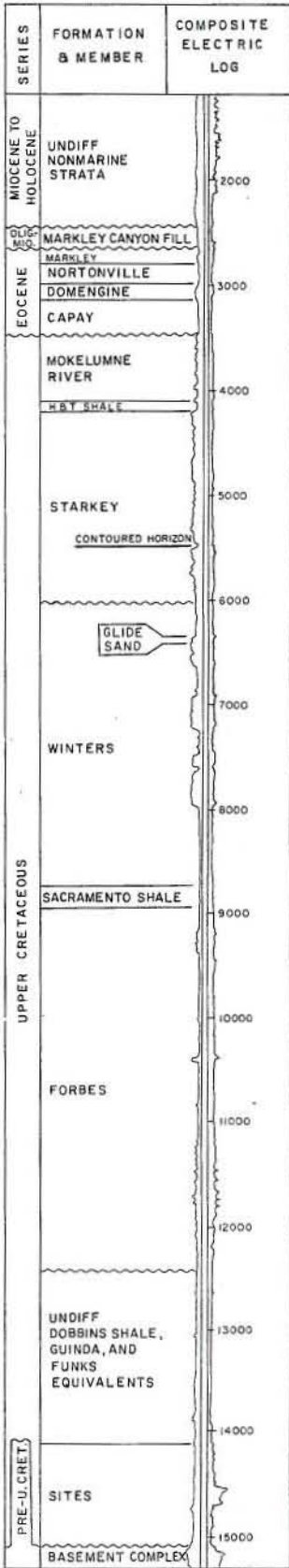
Peak oil production (bbl)				63,780
Year .....				1909
Peak gas production, net (Mcf)				
Year .....				

Base of fresh water (ft.): 200

Remarks: As early as 1861, oil was refined from asphaltum taken from "tar springs" in the vicinity of the field. Exploratory wells were drilled as early as 1886. Artesian salt water flow was reported at 1,615'. A blowout was reported in one well at 1,082'.

Selected References: Allen, J. E., 1946, Geology of the San Juan Bautista Quadrangle, Calif.: Calif. Div. of Mines Bull. 133, p. 73-74.  
 Armstrong, Charles F., 1980, Environmental Geologic Analysis of the Tar Creek South Study Area, Santa Clara County, Calif.: Calif. Div. of Mines and Geology, p. 10-11.  
 Calif. State Mining Bureau Bull. 69, 1914, p. 470 and 506.  
 Davis, F. F., 1954, Mines and Mineral Resources of Santa Clara County, Calif.: Calif. Div. of Mines, Calif. Journal of Mines and Geology, Vol. 50, No. 2, p. 383-385.  
 Micheliin, James, 1943, Sargent Oil Field: Calif. Div. of Mines Bull. 118, p. 23, 77, 79, and 475.

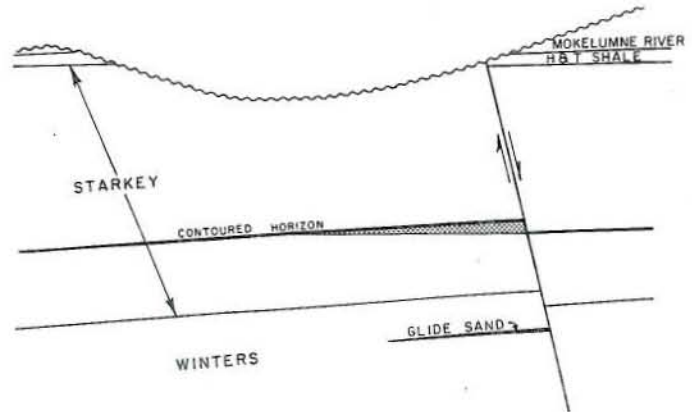
# SAXON GAS FIELD



CONTOURS ON TOP OF S-5 SAND

A ————— B

MARKLEY CANYON FILL





COUNTY: YOLO

SAXON GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Aminoil USA, Inc. "H & C-Glide Colby" 1	Hunnicuttt & Camp Drilling Co. "Glide-Colby" 1	29 7N 3E	MD	8,907	Glide	
Deepest well	Exxon Corp. "John C. Maxwell" 1	Humble Oil & Refining Co. "John C. Maxwell" 1	7 7N 3E	MD	15,060		Dobbins Late Cretaceous

POOL DATA

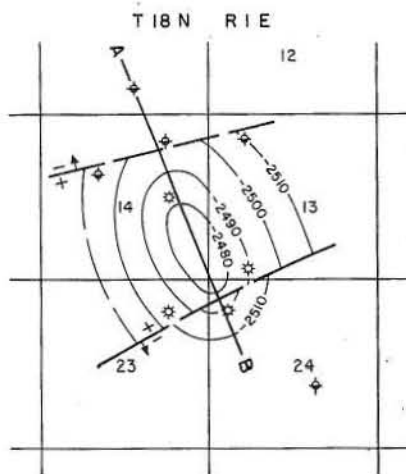
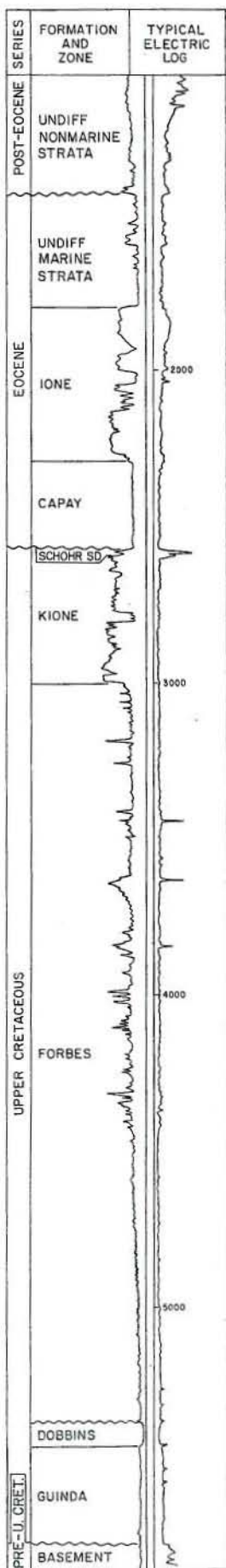
ITEM	POOL DATA			FIELD OR AREA DATA
	K-4 SAND	UNNAMED	GLIDE	
Discovery date .....	November 1968	April 1973	February 1968	
Initial production rates				
Oil (bbl/day) .....				
Gas (Mcf/day) .....	4,850	5,000	4,950	
Flow pressure (psi) .....	2,414	2,150	2,225	
Bean size (in.) .....	20/64	5/16	20/64	
Initial reservoir pressure (psi) .....	2,865	3,100	3,355	
Reservoir temperature (°F) .....	124	125	134	
Initial oil content (STB/ac.-ft.) .....				
Initial gas content (MSCF/ac.-ft.) .....	1,400-1,800	770-1,200	790-1,300	
Formation .....	Starkey	Winters	Winters	
Geologic age .....	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	6,280	6,820	7,050	
Average net thickness (ft.) .....	30	8	10	
Maximum productive area (acres) .....				1,530
<b>RESERVOIR ROCK PROPERTIES</b>				
Porosity (%) .....	26-31 †	19-25 †	19-25 †	
So <sub>2</sub> (%) .....	30-35 †	45-55 †	45-55 †	
Sw <sub>i</sub> (%) .....	65-70 †	45-55 †	45-55 †	
Sg <sub>i</sub> (%) .....				
Permeability to air (md) .....				
<b>RESERVOIR FLUID PROPERTIES</b>				
Oil:				
Oil gravity (*API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	.600	.608	.600	
Heating value (Btu/cu. ft.) .....	860	900	840	
Water:				
Salinity, NaCl (ppm) .....			11,370	
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				
<b>ENHANCED RECOVERY PROJECTS</b>				
Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				
Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				2,825,891
Year .....				1979

Base of fresh water (ft.): 2,500

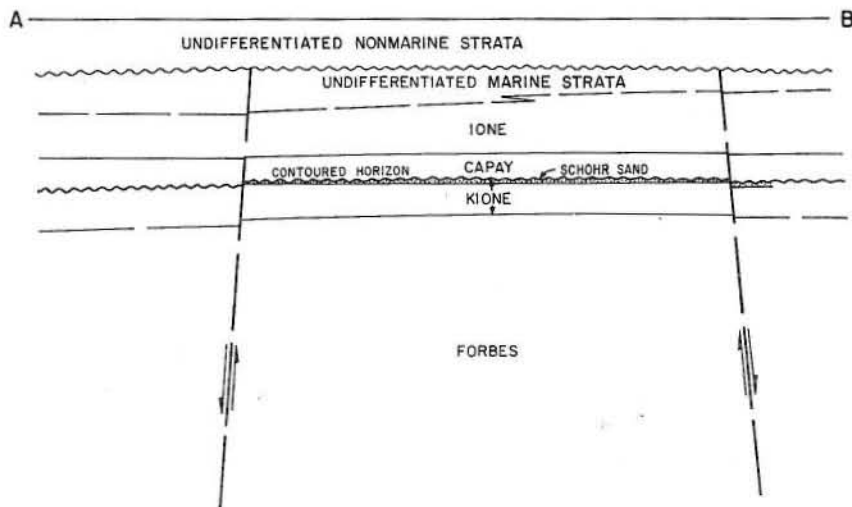
Remarks: Commercial gas deliveries began in January 1970.

Selected References:

# SCHOHR RANCH GAS FIELD (Abandoned)



CONTOURS ON TOP OF SCHOHR SAND



COUNTY: BUTTE

SCHOHR RANCH GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Exxon Corp. "Elna B. Schohr" 1	Humble Oil & Refining Co. "Elna B. Schohr" 1	23 18N 1E	MD	4,775	Schohr	
Deepest well	Exxon Corp. "Elna B. Schohr" 2	Humble Oil & Refining Co. "Elna B. Schohr" 2	14 18N 1E	MD	5,830		basement pre-Late Cret.

POOL DATA

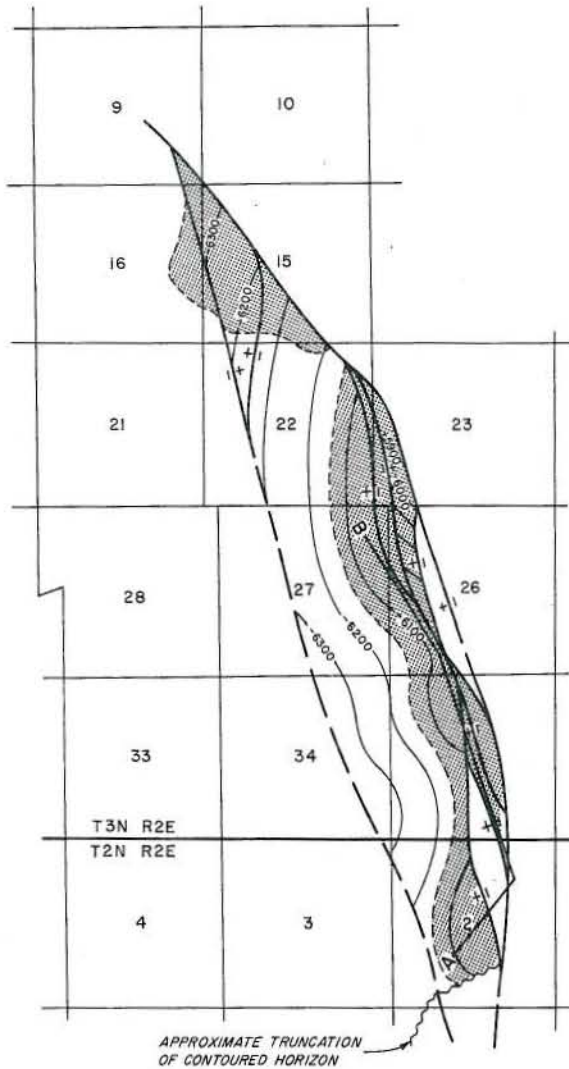
ITEM	SCHOHR					FIELD OR AREA DATA
Discovery date .....	March 1957					
Initial production rates						
Oil (bbl/day) .....	5,073					
Gas (Mcf/day) .....	800					
Flow pressure (psi) .....	1/2					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,220					
Reservoir temperature (°F) .....	95					
Initial oil content (STB/ac.-ft.) .....	850					
Initial gas content (MSCF/ac.-ft.) .....	Kione					
Formation .....	Late Cretaceous					
Geologic age .....						
Average depth (ft.) .....	2,570					
Average net thickness (ft.) .....	15					
Maximum productive area (acres) .....	360					
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	30*					
So <sub>g</sub> (%) .....						
Sw <sub>g</sub> (%) .....	25*					
Sg <sub>i</sub> (%) .....	75*					
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.623††					
Heating value (Btu/cu. ft.) .....	840					
Water:						
Salinity, NaCl (ppm) .....	4,300					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....	754,974					
Peak gas production, net (Mcf)						
Year .....	1960					

Base of fresh water (ft.): 1,200

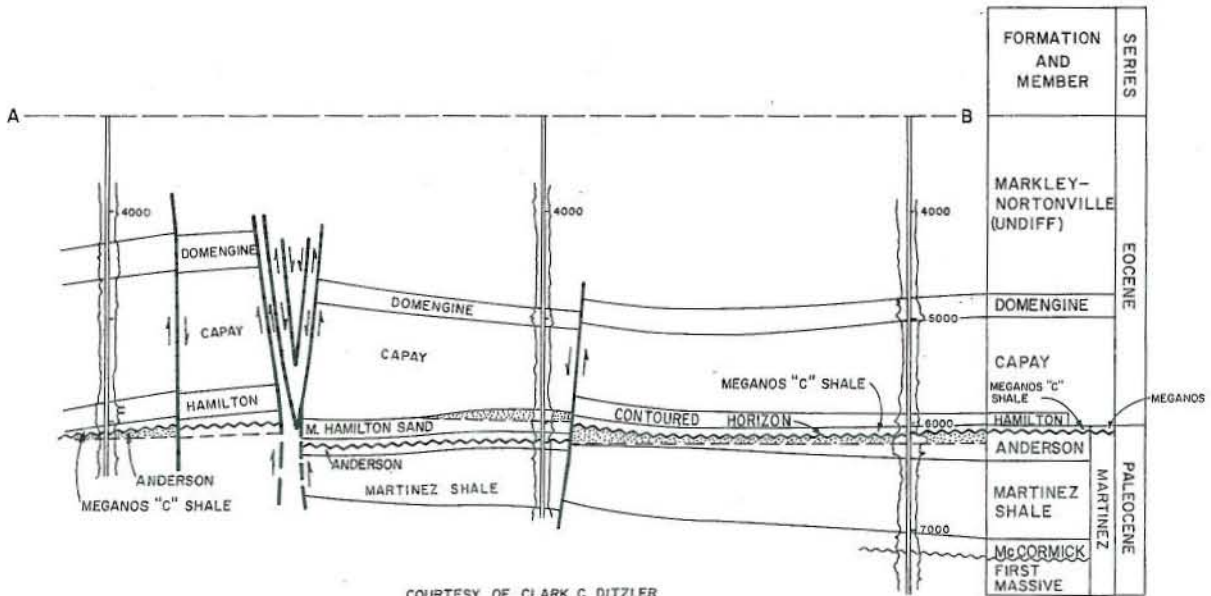
Remarks: Commercial gas deliveries began in December 1959. The field was abandoned in March 1970. Four wells were completed and cumulative gas production was 2,112,993 Mcf.

Selected References:

# SHERMAN ISLAND GAS FIELD



CONTOURS ON TOP OF ANDERSON SAND



COURTESY OF CLARK C. DITZLER

COUNTY: CONTRA COSTA, SACRAMENTO and SOLANO

SHERMAN ISLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Aminoil USA, Inc. "Upham" 1	Signal Oil & Gas Co. "Upham" 1	26 3N 2E	MD	7,500	Anderson	
Deepest well	Occidental Petroleum Corp. "Upham" 1	Same as present	34 3N 2E	MD	12,067		D-zone Late Cretaceous

POOL DATA

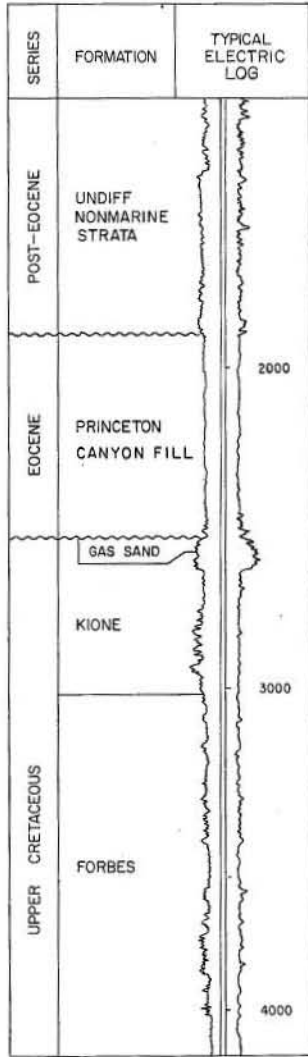
ITEM	NORTONVILLE			HAMILTON			ANDERSON			FIELD OR AREA DATA
Discovery date .....	July 1970			April 1966			September 1965			
Initial production rates										
Oil (bbl/day) .....	1,248			2,297			5,770			
Gas (Mcf/day) .....	1,540			1,835			2,163			
Flow pressure (psi) .....	3/16			1/4			21/64			
Bean size (in.) .....										
Initial reservoir pressure (psi) .....	1,874			2,591			3,112			
Reservoir temperature (°F) .....	143			149			152			
Initial oil content (STB/ac.-ft.) .....	890			1,000-1,300			1,700-2,000			
Initial gas content (MSCF/ac.-ft.) .....	Nortonville			Capay			Martinez			
Formation .....	Eocene			Eocene			Paleocene			
Geologic age .....	4,770			5,750			6,100			
Average depth (ft.) .....	10			75			50			
Average net thickness (ft.) .....										
Maximum productive area (acres) .....										1,660
RESERVOIR ROCK PROPERTIES										
Porosity (%) .....	25**			25-29***			29-32***			
So <sub>g</sub> (%) .....	35**			40-45***			30-35***			
Sw <sub>i</sub> (%) .....	65**			55-60***			65-70***			
Sg <sub>g</sub> (%) .....										
Permeability to air (md) .....										
RESERVOIR FLUID PROPERTIES										
Oil:										
Oil gravity (°API) .....										
Sulfur content (% by wt.) .....										
Initial solution GOR (SCF/STB) .....										
Initial oil FVF (RB/STB) .....										
Bubble point press. (psia) .....										
Viscosity (cp) @ °F .....										
Gas:										
Specific gravity (air = 1.0) .....	.570			.593			.593			
Heating value (Btu/cu. ft.) .....	985			1,016			1,028			
Water:										
Salinity, NaCl (ppm) .....	-			1,810			10,000			
T.D.S. (ppm) .....										
R <sub>w</sub> (ohm/m) (77°F) .....										
ENHANCED RECOVERY PROJECTS										
Enhanced recovery projects .....										
Date started .....										
Date discontinued .....										
Peak oil production (bbl)										
Year .....										
Peak gas production, net (Mcf)										5,629,045
Year .....										1971

Base of fresh water (ft.): 800

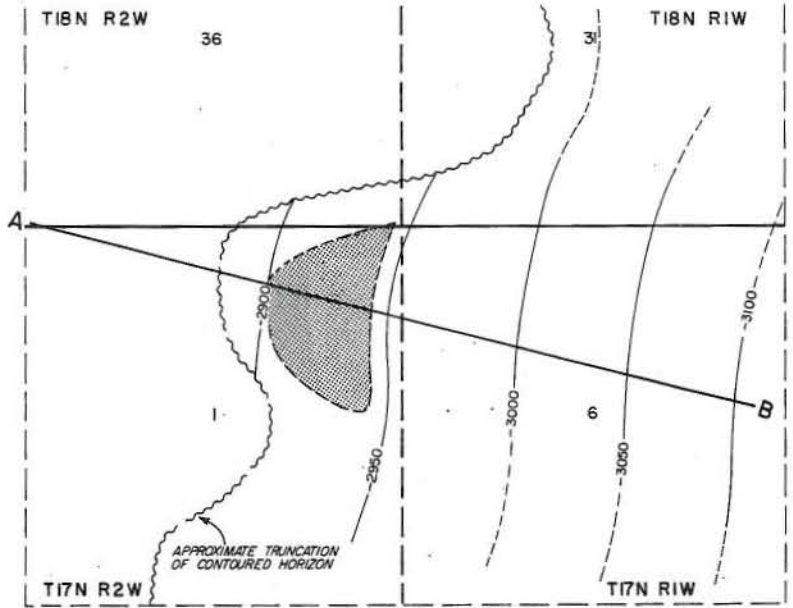
Remarks: Commercial gas deliveries began in October 1967. Condensate production in 1979 was 930 barrels; cumulative condensate production was 95,945 barrels.

Selected References: Ditzler, C. C., 1972, Sherman Island Gas Field in Selected Papers to San Joaquin Geological Society, Vol. 4, p. 21-25.

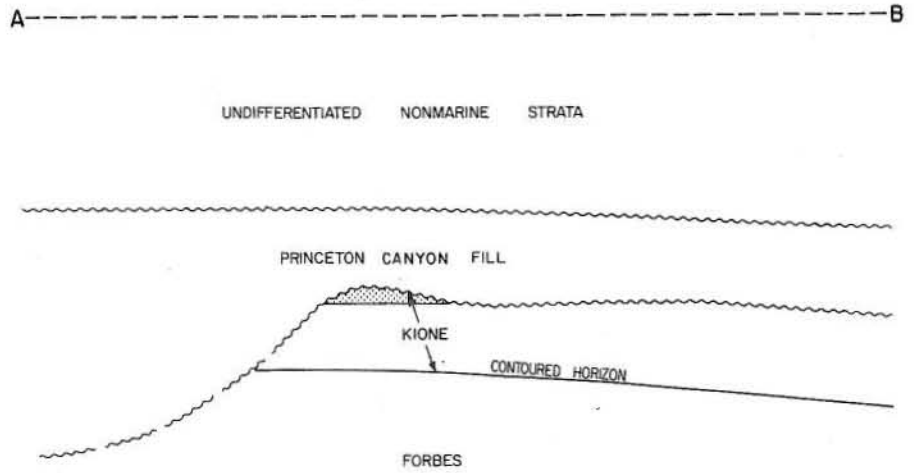
# STEGEMAN GAS FIELD



DECEMBER 1979



CONTOURS ON BASE OF KIONE



COUNTY: COLUSA

STEGEMAN GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "Thousand Acre Ranch 1" 1	Same as present	1 17N 2W	MD	4,085	Kione	Forbes Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

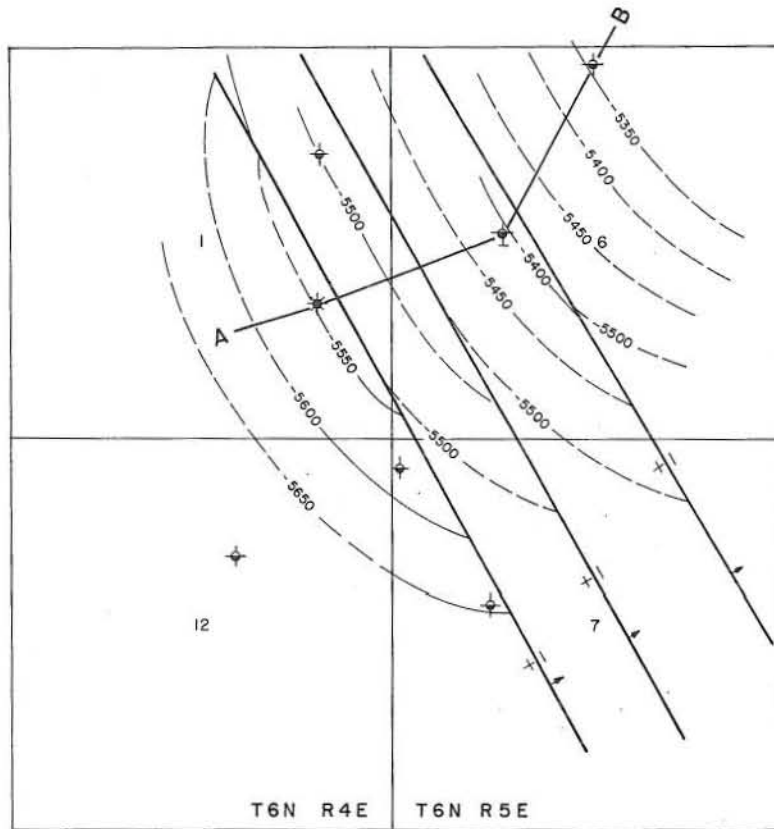
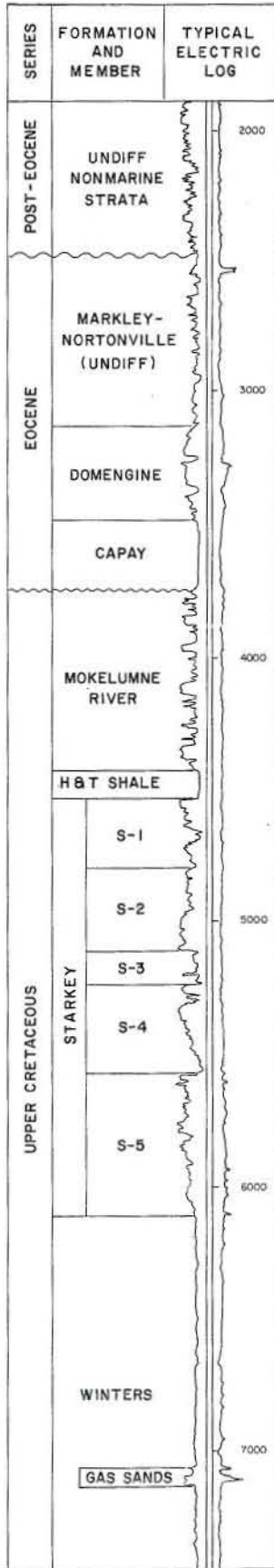
ITEM	KIONE					FIELD OR AREA DATA
Discovery date .....	July 1976					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	13,000					
Flow pressure (psi) .....						
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,110					
Reservoir temperature (°F) .....	110					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	620-670					
Formation .....	Kione					
Geologic age .....	Late Cretaceous					
Average depth (ft.) .....	2,490					
Average net thickness (ft.) .....	25					
Maximum productive area (acres) .....	40					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	27-29***					
So <sub>g</sub> (%) .....						
Swi (%) .....	30*					
S <sub>gr</sub> (%) .....	70*					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	-					
Heating value (Btu/cu. ft.) .....	928					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	497,528					
Year .....	1979					

Base of fresh water (ft.): 1,900

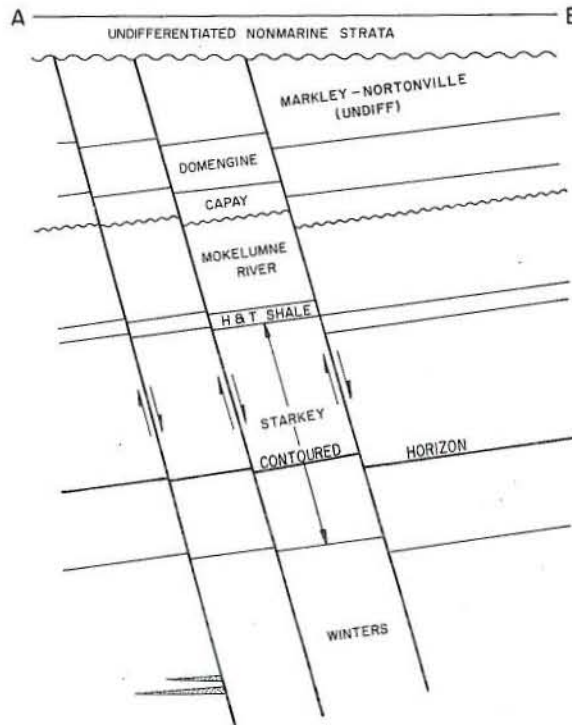
Remarks:

Selected References:

# STONE LAKE GAS FIELD



CONTOURS ON TOP OF S-5 SAND





COUNTY: SACRAMENTO

STONE LAKE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Atlantic Oil Co. "Elliott Ranch" 3	Same as present	1 6N 4E	MD	7,430	Winters	
Deepest well	Cities Service Oil Co. "McKeon Const." 1	Cities Service Oil Co. "Costello" 1	6 6N 5E	MD	8,590		Forbes Late Cretaceous

POOL DATA

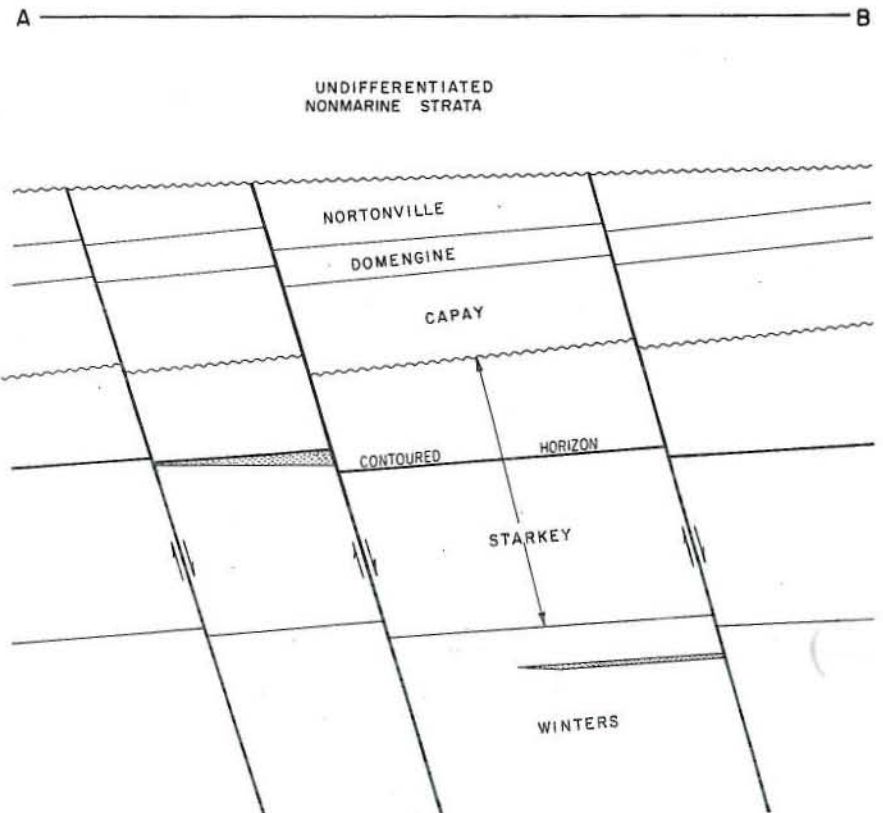
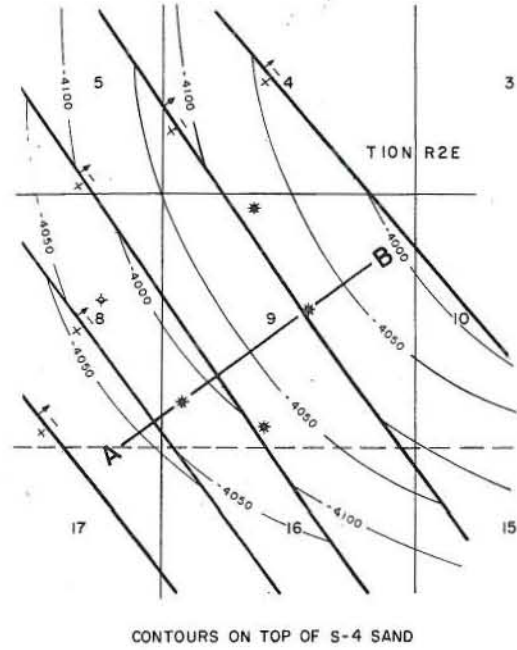
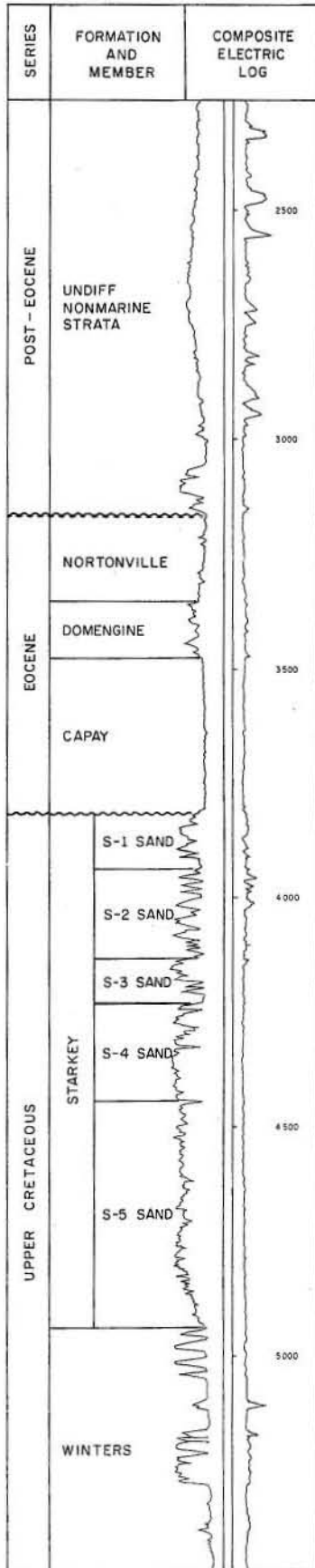
ITEM	WINTERS					FIELD OR AREA DATA
Discovery date .....	November 1974					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	7,700					
Flow pressure (psi) .....	2,680					
Bean size (in.) .....	3/8					
Initial reservoir pressure (psi) .....	3,246					
Reservoir temperature (°F) .....	128					
Initial oil content (STB/ac.-ft.) .....	1,700-2,100					
Initial gas content (MSCF/ac.-ft.) .....	Winters					
Formation .....	Late Cretaceous					
Geologic age .....						
Average depth (ft.) .....	7,072					
Average net thickness (ft.) .....	20					
Maximum productive area (acres) .....	90					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	28-32***					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	30-35***					
Sg <sub>g</sub> (%) .....	65-70***					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.605					
Heating value (Btu/cu. ft.) .....	900					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	183,361					
Year .....	1979					

Base of fresh water (ft.): 800

Remarks: Commercial gas deliveries began in May 1978.

Selected References:

# SUGARFIELD GAS FIELD



COUNTY: YOLO

SUGARFIELD GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	The Dow Chemical Co. "Wauhah" 1	Same as present	9 10N 2E	MD	6,271	Winters	
Deepest well	The Dow Chemical Co. "Robinson Well" 1	Same as present	16 10N 2E	MD	6,729		Confidential

POOL DATA

ITEM	POOL DATA				FIELD OR AREA DATA
	STARKEY	WINTERS			
Discovery date .....	December 1977	July 1976			
Initial production rates					
Oil (bbl/day) .....	1,380	4,020			
Gas (Mcf/day) .....	1,550	1,750			
Flow pressure (psi) .....	3/16	20/64			
Bean size (in.) .....					
Initial reservoir pressure (psi) .....	1,780	2,240			
Reservoir temperature (°F) .....	108	112			
Initial oil content (STB/ac.-ft.) .....	880-1,200	850-1,200			
Initial gas content (MSCF/ac.-ft.) .....	Starkey	Winters			
Formation .....	Late Cretaceous	Late Cretaceous			
Geologic age .....					
Average depth (ft.) .....	4,080	4,930			
Average net thickness (ft.) .....	30	15			
Maximum productive area (acres) .....					240

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	28-34†	22-28†			
Soj (%) .....					
Swi (%) .....	40-45†	40-45†			
Sgi (%) .....	55-60†	55-60†			
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.579	.592			
Heating value (Btu/cu. ft.) .....	956	930			
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

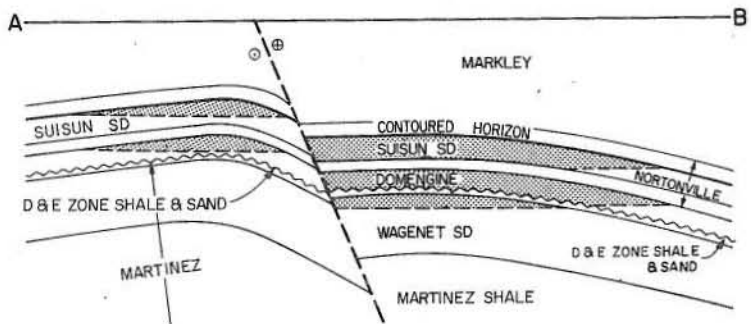
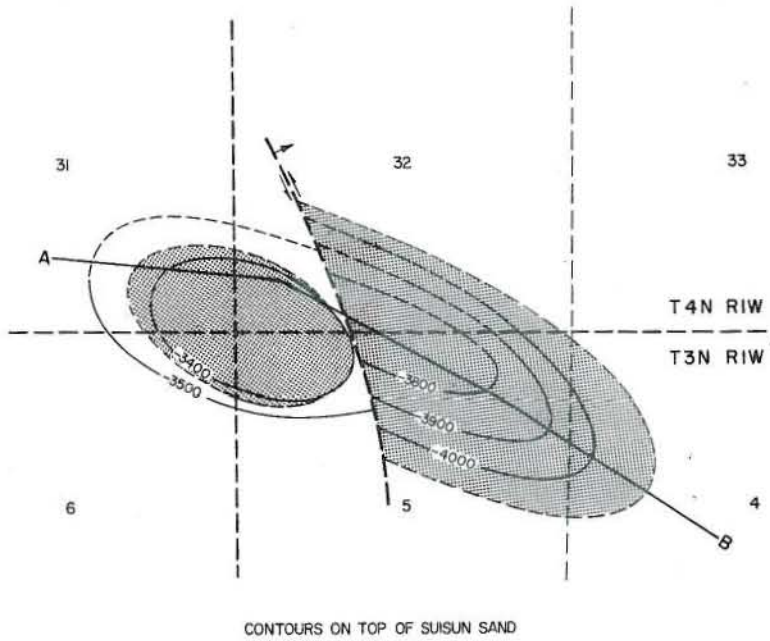
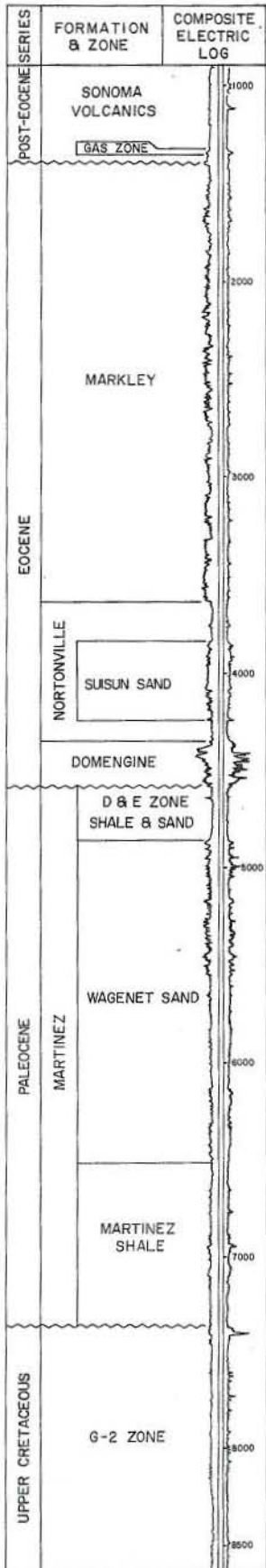
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					

Base of fresh water (ft.): 2,400

Remarks: Commercial gas deliveries began in February 1980.

Selected References:

# SUISUN BAY GAS FIELD



STRUCTURAL INTERPRETATION COURTESY OF CHEVRON U.S.A., INC.

COUNTY: SOLANO

SUISUN BAY GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron U.S.A. Inc. "Suisun Community" 3	Standard Oil Co. of Calif. "Suisun Community" 3	5 3N 1W	MD	5,645	Suisun	
Deepest well	Chevron U.S.A. Inc. "Suisun Community" 16	Standard Oil Co. of Calif. "Suisun Community" 16	4 3N 1W	MD	8,898		G-zone Late Cretaceous

POOL DATA

ITEM	POOL DATA				FIELD OR AREA DATA
	UNNAMED	SUISUN	DOMENGINE	WAGENET	
Discovery date .....	August 1959	September 1944	January 1946	October 1961	
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	835	7,350	5,675	2,620	
Flow pressure (psi) .....	225	1,320	1,025	760	
Bean size (in.) .....	3/8	1/2	1/2	3/8	
Initial reservoir pressure (psi) .....	420	1,610	1,800	2,070	
Reservoir temperature (°F) .....	94	127	137	143	
Initial oil content (STB/ac-ft.) .....		910	950-1,300	790-1,000	
Initial gas content (MSCF/ac-ft.) .....			Domengine	Martinez	
Formation .....	Sonoma Volcanics	Nortonville			
Geologic age .....	Pliocene	Eocene	Eocene	Paleocene	
Average depth (ft.) .....	975	3,650	4,150	4,650	
Average net thickness (ft.) .....	25	175	65	80	
Maximum productive area (acres) .....					720

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	-	24	24-30	20-24***	
So <sub>2</sub> (%) .....	-	22	20-26	30-35***	
Sw <sub>2</sub> (%) .....	-	78	74-80	65-70***	
Sg <sub>2</sub> (%) .....	-	210	290-350		
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.570††	.585††	.585††	.590††	
Heating value (Btu/cu. ft.) .....	1,020	1,040	1,040	1,048	
Water:					
Salinity, NaCl (ppm) .....	770	4,300-16,400	6,700-16,900	13,000	
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

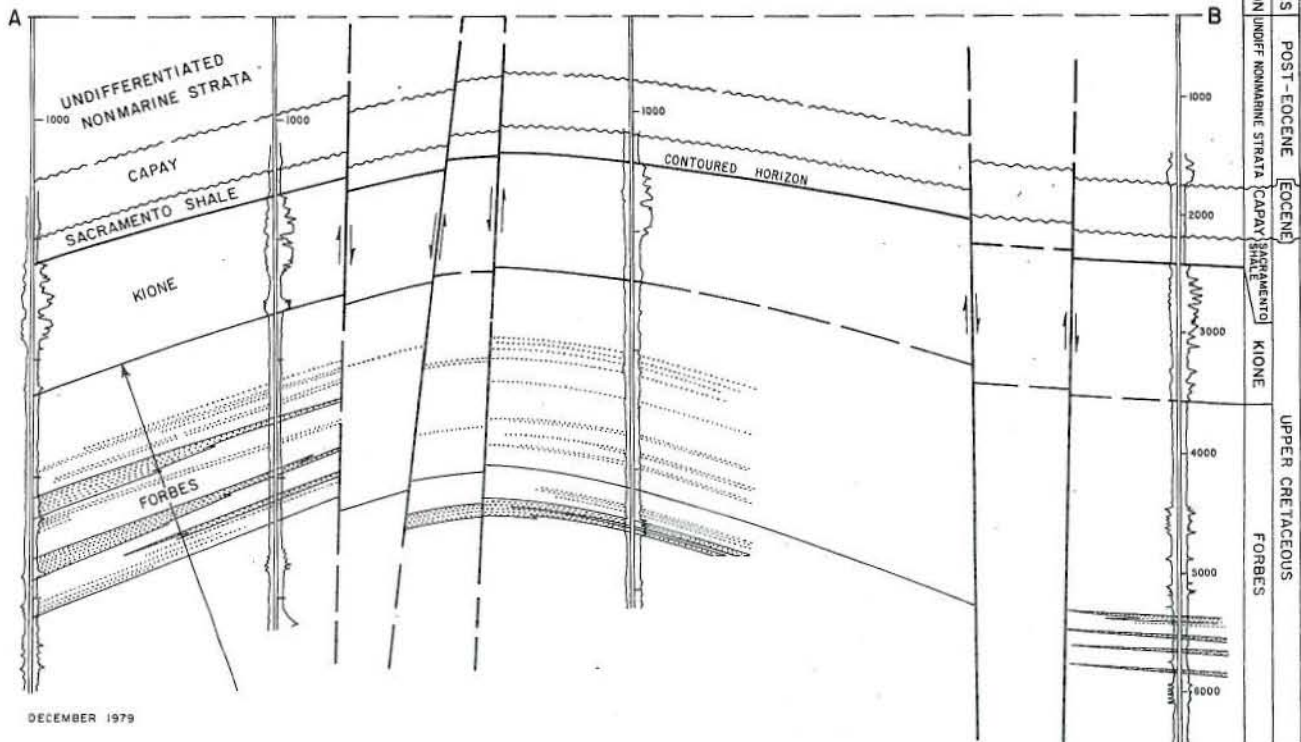
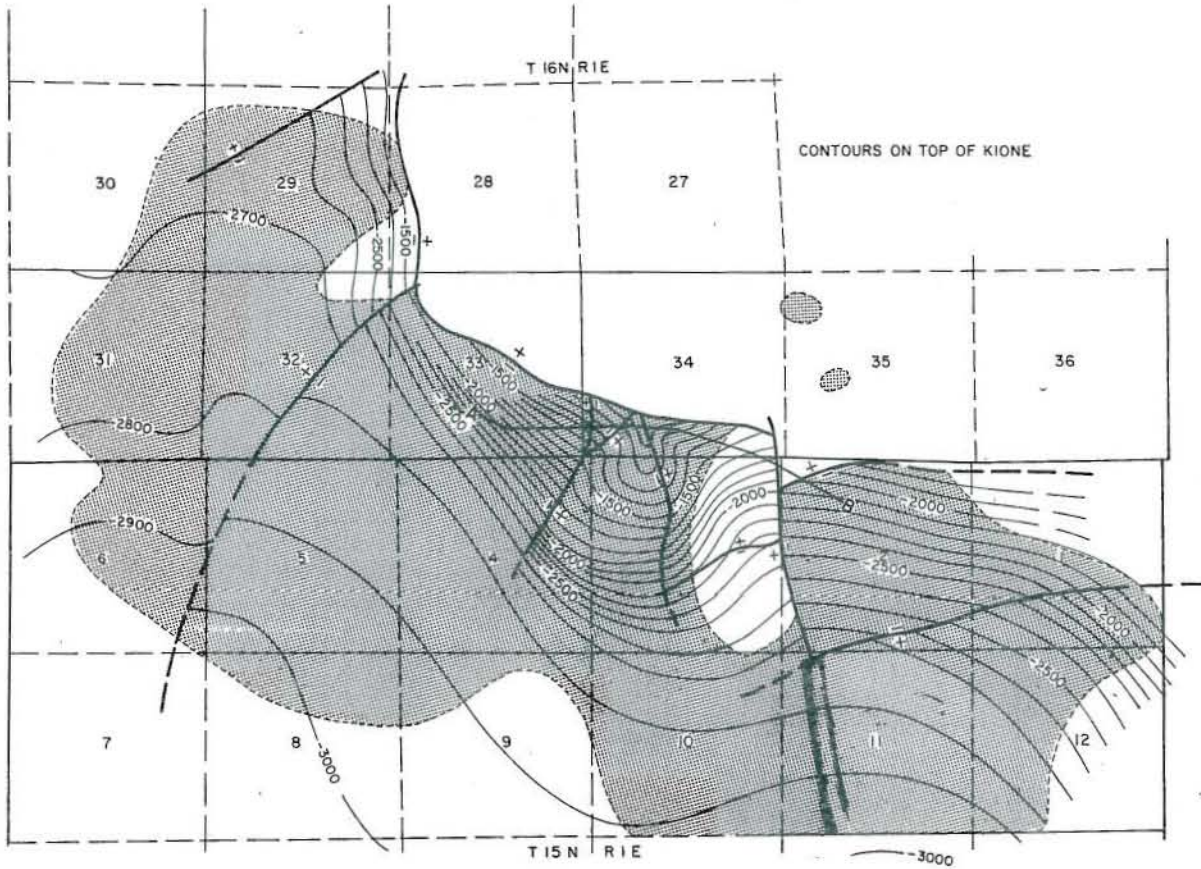
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					6,166,271
Year .....					1966

Base of fresh water (ft.): None

Remarks: Commercial gas deliveries began in February 1947. In June 1959, G. E. Kadane & Sons "Suisun Community" 10 (now Mobil Oil Corporation "Standard Suisun" 10), while drilling at 1,024 feet, blew out of control. The substructure, drawworks, and most of the drilling mast were lost in the resulting crater.

Selected References:

# SUTTER BUTTES GAS FIELD



COUNTY: SUTTER

SUTTER BUTTES GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Buttes Resources Co. "Buttes" 1	The Buttes Oilfields, Inc. "Buttes" 1	35 16N 1E	MD	2,727	Forbes	
Deepest well	Buttes Resources Co. "Buttes" 14	Buttes Gas & Oil Co. "Buttes" 14	12 15N 1E	MD	7,868		basement pre-Late Cret.

POOL DATA

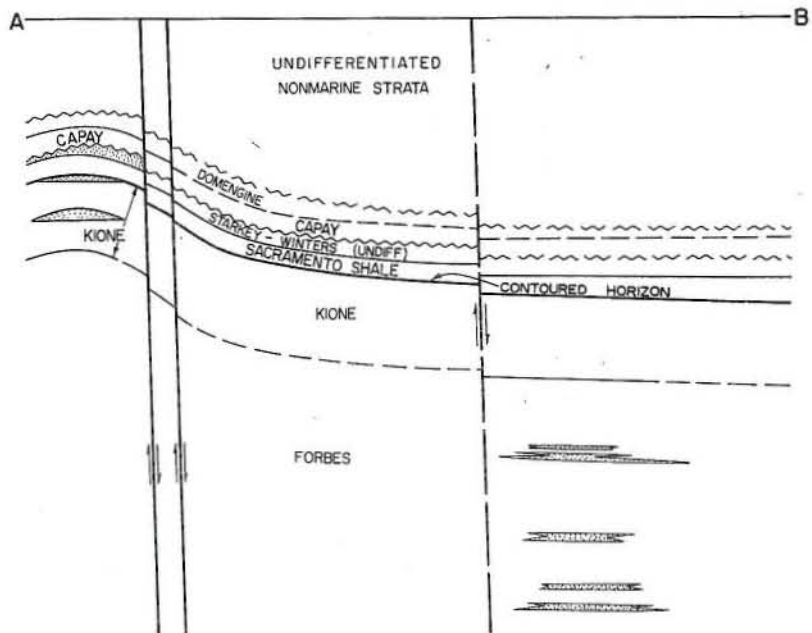
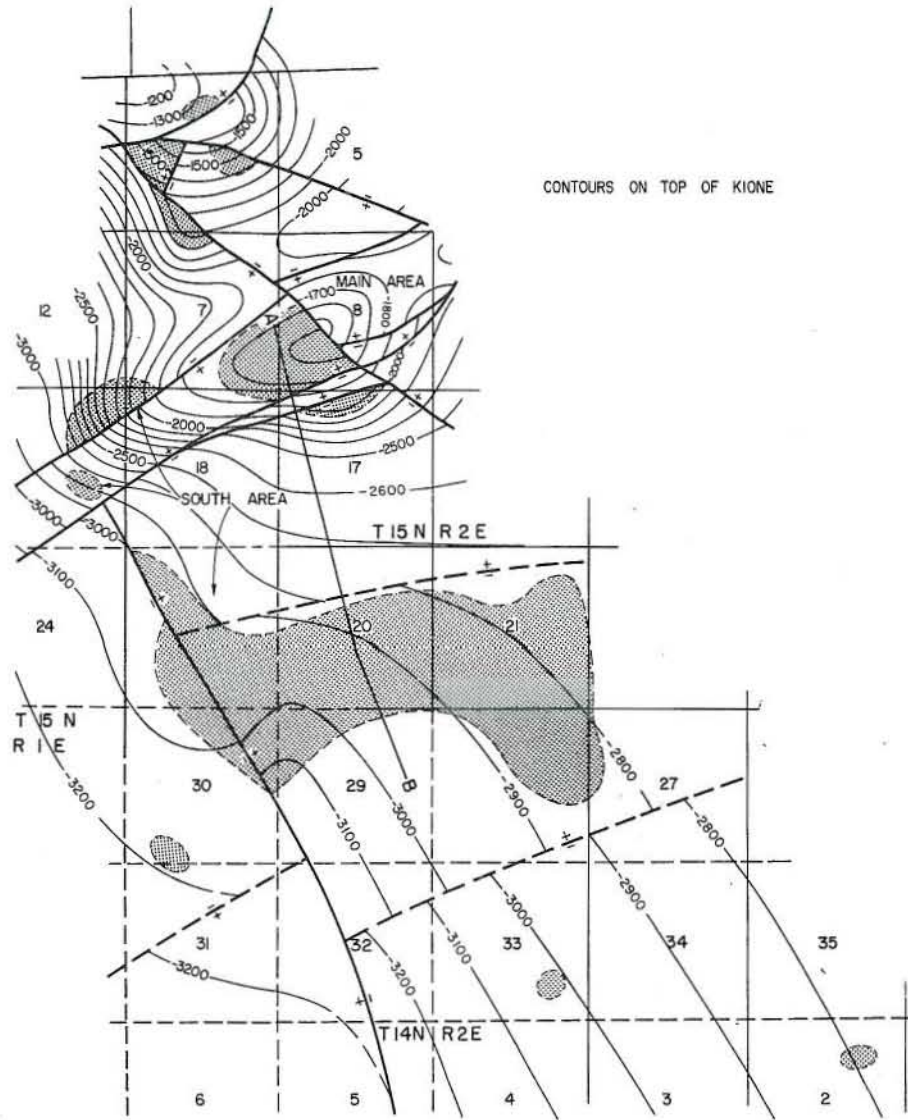
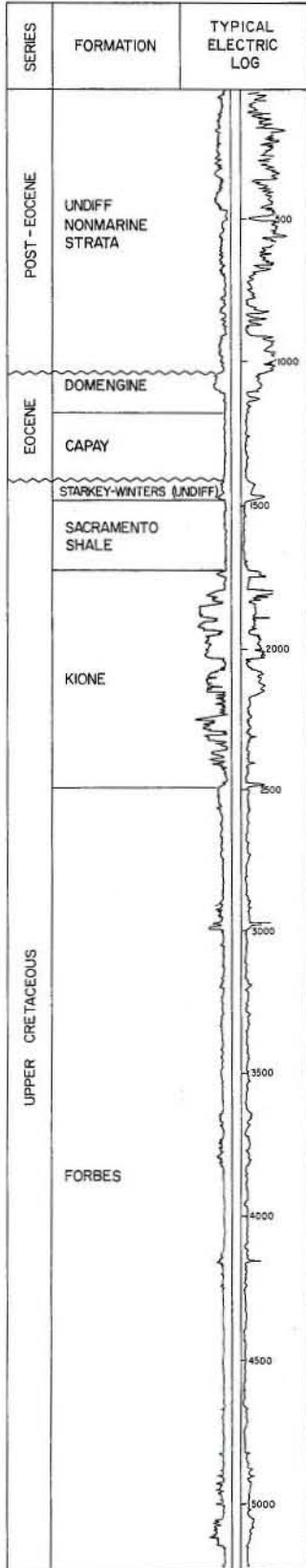
ITEM	UNNAMED SAND STRINGERS				FIELD OR AREA DATA
Discovery date .....	February 1953				
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	3,060				
Flow pressure (psi) .....					
Bean size (in.) .....					
Initial reservoir pressure (psi) .....	1,500-4,500				
Reservoir temperature (°F) .....	94-136				
Initial oil content (STB/ac.-ft.) .....	600-980				
Initial gas content (MSCF/ac.-ft.) .....	Forbes				
Formation .....	Late Cretaceous				
Geologic age .....	2,100-6,000				
Average depth (ft.) .....	1-60				
Average net thickness (ft.) .....	9,010				
Maximum productive area (acres) .....					
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	15-28				
So <sub>2</sub> (%) .....					
Sw <sub>1</sub> (%) .....	45-55				
Sg <sub>1</sub> (%) .....	45-55				
Permeability to air (md) .....	108				
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.560-.636				
Heating value (Btu/cu. ft.) .....	835-1,020				
Water:					
Salinity, NaCl (ppm) .....	3,600-31,300				
T.D.S. (ppm) .....	4,500-23,000				
R <sub>w</sub> (ohm/m) (77°F) .....	.35-1.6				
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)	15,201,294				
Year .....	1965				

Base of fresh water (ft.): 2,000

Remarks: Formerly known as Marysville Buttes Gas field. Commercial gas deliveries began in November 1938.

Selected References: Hunter, G. W., 1955, Marysville Buttes Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 41, No. 1. Railroad Commission of the State of Calif. and Calif. Div. of Oil and Gas, Marysville Buttes Gas Field in Estimate of the Natural Gas Reserves of the State of Calif. as of Jan. 1, 1946: Case No. 4591, Special Study No. 8-525, p. 34-39, 1946.

# SUTTER CITY GAS FIELD





COUNTY: SUTTER

**SUTTER CITY GAS FIELD**  
MAIN AREA

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Buttes Resources Co. "Sutter Community A" 1	Richfield Oil Corp. "Sutter Community A" 1	8 15N 2E	MD	3,104	Kione	
Deepest well	Buttes Resources Co. "Butte Community B" 6	Richfield Oil Corp. "Butte Community B" 6	7 15N 2E	MD	5,084		rhyolite a/ Plio. or Pleis.

**POOL DATA**

ITEM					FIELD OR AREA DATA
	UNNAMED	KIONE			
Discovery date .....	June 1964 <sup>b/</sup>	August 1952			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	655	280			
Flow pressure (psi) .....	190	900			
Bean size (in.) .....	25/64	1/8			
Initial reservoir pressure (psi) .....	650	800			
Reservoir temperature (°F) .....	95	99			
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	230-310	380-500			
Formation .....	Starkey-Winters	Kione			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	1,440	1,700			
Average net thickness (ft.) .....	30	140			
Maximum productive area (acres) .....					490

**RESERVOIR ROCK PROPERTIES**

Porosity (%) .....	20-25***	25-30***			
So <sub>i</sub> (%) .....					
Sw <sub>i</sub> (%) .....	35-40***	30-35***			
Sg <sub>i</sub> (%) .....	60-65***	65-70***			
Permeability to air (md) .....					

**RESERVOIR FLUID PROPERTIES**

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	-	.593††			.597††
Heating value (Btu/cu. ft.) .....	-	920			913
Water:					
Salinity, NaCl (ppm) .....	-	2,200			
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					2,062,265 1958

Base of fresh water (ft.): 1,200-1,700

Remarks: Commercial gas deliveries began in June 1953.

<sup>a/</sup> Intruded into the Forbes Formation (Late Cretaceous).

<sup>b/</sup> Date of recompletion, originally completed in the Kione formation.

Selected References:

COUNTY: SUTTER

**SUTTER CITY GAS FIELD**  
SOUTH AREA

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Atlantic Oil Co. "Epperson" 1	Same as present	19 15N 2E	MD	7,150	unnamed sand stringers	Guinda Late Cretaceous
Deepest well	Atlantic Oil Co. "Sutter Unit K" 1	Same as present	30 15N 2E	MD	7,925 <sup>a</sup>		

**POOL DATA**

ITEM	UNNAMED SAND STRINGERS		G-ZONE		FIELD OR AREA DATA
Discovery date .....	August 1961		September 1961		
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	2,000-8,000 <sup>b/</sup>		6,000 <sup>c/</sup>		
Flow pressure (psi) .....	1,600-2,000		1,800		
Bean size (in.) .....	15/64-27/64		25/64		
Initial reservoir pressure (psi) .....	2,040-3,500		3,210		
Reservoir temperature (°F) .....	111-139		124-128		
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	830-1,300		660-1,100		
Formation .....	Forbes		Dobbins		
Geologic age .....	Late Cretaceous		Late Cretaceous		
Average depth (ft.) .....	3,950-6,830		6,160-6,620		
Average net thickness (ft.) .....	3-50		5-20		
Maximum productive area (acres) .....					3,080

**RESERVOIR ROCK PROPERTIES**

Porosity (%) .....	18-30†		15-20***		
Soj (%) .....					
Swj (%) .....	35-50†		45-55***		
Sgi (%) .....	50-65†		45-55***		
Permeability to air (md) .....					

**RESERVOIR FLUID PROPERTIES**

<b>Oil:</b>					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
<b>Gas:</b>					
Specific gravity (air = 1.0) .....	.563-.691		-		
Heating value (Btu/cu. ft.) .....	684-1,019		-		
<b>Water:</b>					
Salinity, NaCl (ppm) .....	2,200-22,000		-		
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

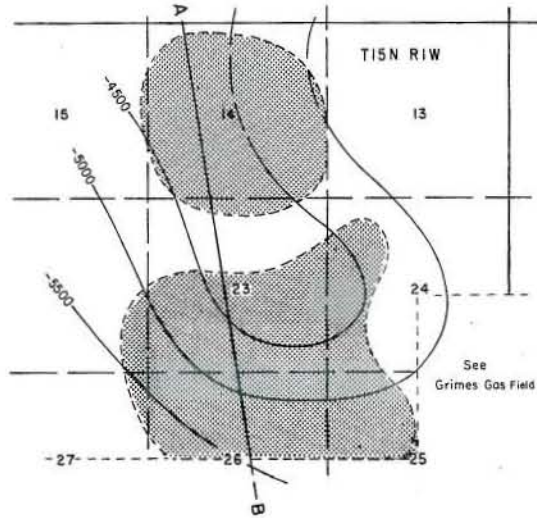
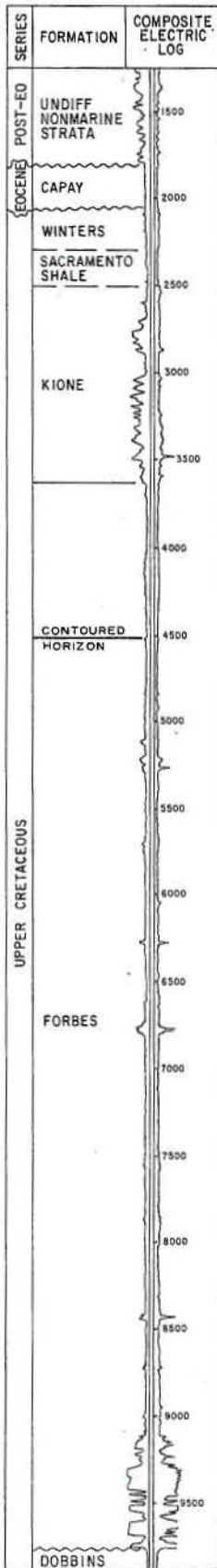
Peak oil production (bbl) Year .....					
Peak gas production, net (Mcf) Year .....					5,787,788 1966

Base of fresh water (ft.): Above 1,000

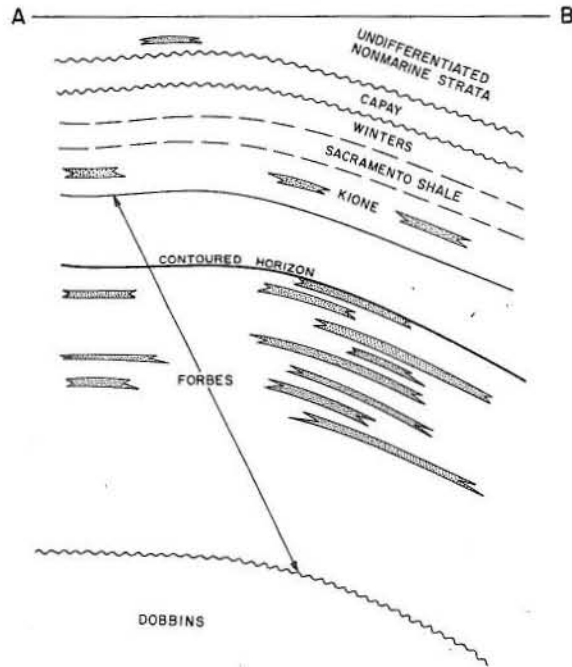
Remarks: Commercial gas deliveries began in June 1962.  
<sup>a/</sup> Directional well, true vertical depth is unknown.  
<sup>b/</sup> Completed from two intervals in the Forbes Formation.  
<sup>c/</sup> Commingled Forbes Formation and G-Zone production.

Selected References:

# SYCAMORE GAS FIELD



CONTOURS ON TOP OF FIRST FORBES PRODUCING SAND & EQUIVALENT



COUNTY: COLUSA and SUTTER

**SYCAMORE GAS FIELD**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Buttes Resources Co. "O. P. Davis" B-1	Humble Oil & Rfg. Co. "O. P. Davis" B-1	14 15N 1W	MD	3,600	undiff. non-marine strata	Dobbins Late Cretaceous
Deepest well	Buttes Resources Co. "O. P. Davis" B-6	Humble Oil & Rfg. Co. "O. P. Davis" B-6	22 15N 1W	MD	10,104		

**POOL DATA**

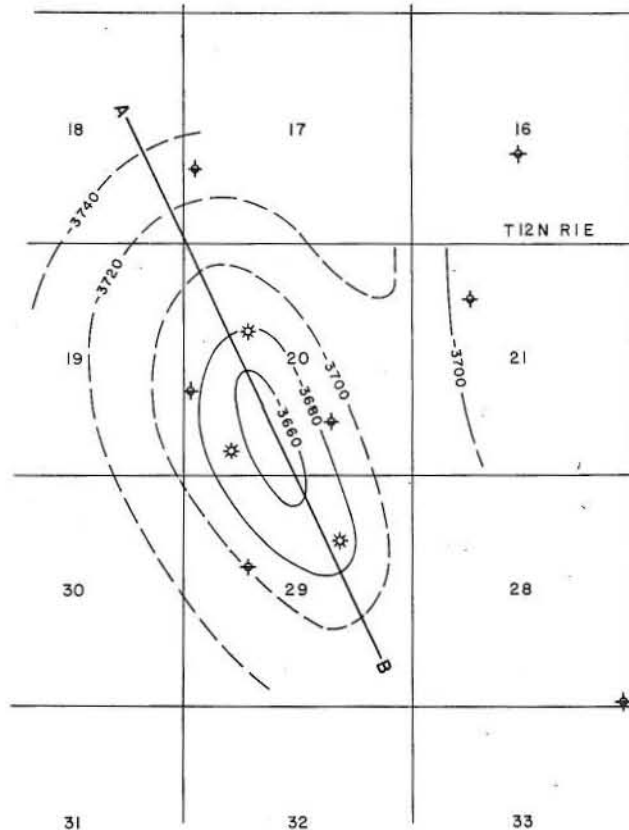
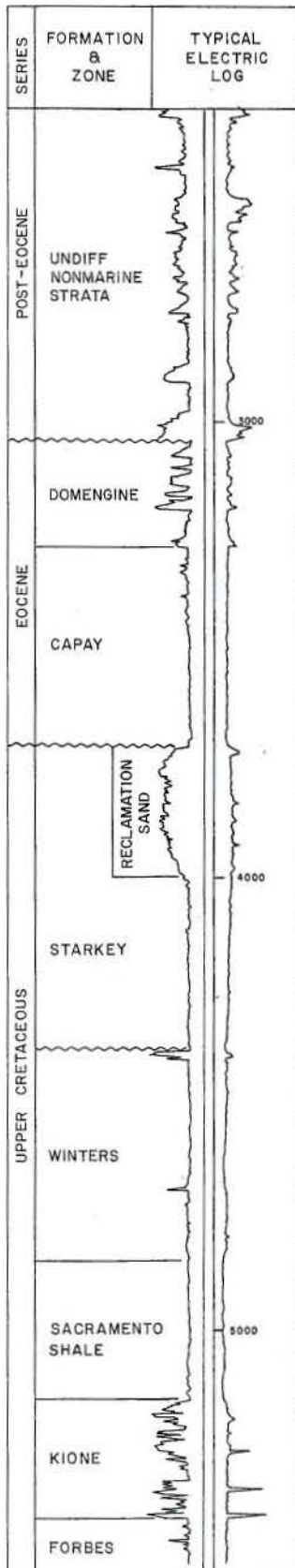
ITEM	UNDIFFERENTIATED NONMARINE STRATA			KIONE	FORBES	FIELD OR AREA DATA
	UNDIFFERENTIATED NONMARINE STRATA	KIONE	FORBES			
Discovery date .....	September 1956 <sup>a/</sup>	February 1970	April 1962			
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,810	3,800	3,680			
Flow pressure (psi) .....	560	600	1,975			
Bean size (in.) .....	1/4	1/2	19/64			
Initial reservoir pressure (psi) .....	642	1,195	2,860-5,720			
Reservoir temperature (°F) .....	90	96	103-135			
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	300-390	670-850	1,800-2,100			
Formation .....	undiff. nonmarine	Kione	Forbes			
Geologic age .....	Post-Eocene	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	1,480	2,750	4,734-7,370			
Average net thickness (ft.) .....	25	40	4-40			
Maximum productive area (acres) .....						1910
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	25-30***	28-33***	25-30			
S <sub>oi</sub> (%) .....						
S <sub>wi</sub> (%) .....	35-40***	30-35***	35-40			
S <sub>gi</sub> (%) .....	60-65***	65-70***	60-65			
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.645	.605	.565			
Heating value (Btu/cu. ft.) .....	810	906	980-1,010			
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						3,235,564 1979

Base of fresh water (ft.): 750

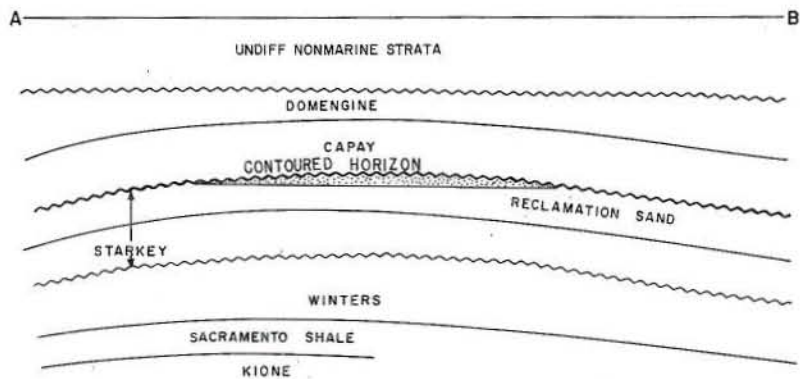
Remarks: Commercial gas deliveries began in January 1963.  
Several wells were completed with multiple strings of 2 7/8" tubing.  
a/ This was the discovery well for Meridian Gas field, which was merged with Sycamore Gas field on January 1, 1966.

Selected References:

# SYCAMORE SLOUGH GAS FIELD ( Abandoned )



CONTOURS ON TOP OF RECLAMATION SAND



COUNTY: YOLO

**SYCAMORE SLOUGH GAS FIELD  
(ABD)**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Aminoil USA, Inc. "Signal-Monterey-Reclamation" 1	Signal Oil and Gas Co. "Signal-Monterey-Reclamation" 1	20 12N 1E	MD	5,500	Reclamation	Kione Late Cretaceous
Deepest well	Natural Gas Corp. of California "Big Valley Recl. Dist." 108-2	Same as present	20 12N 1E	MD	5,525		

**POOL DATA**

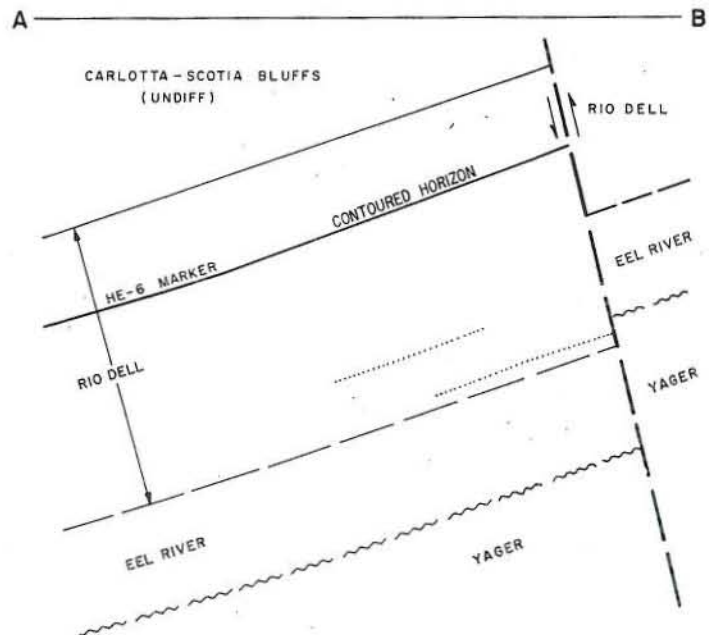
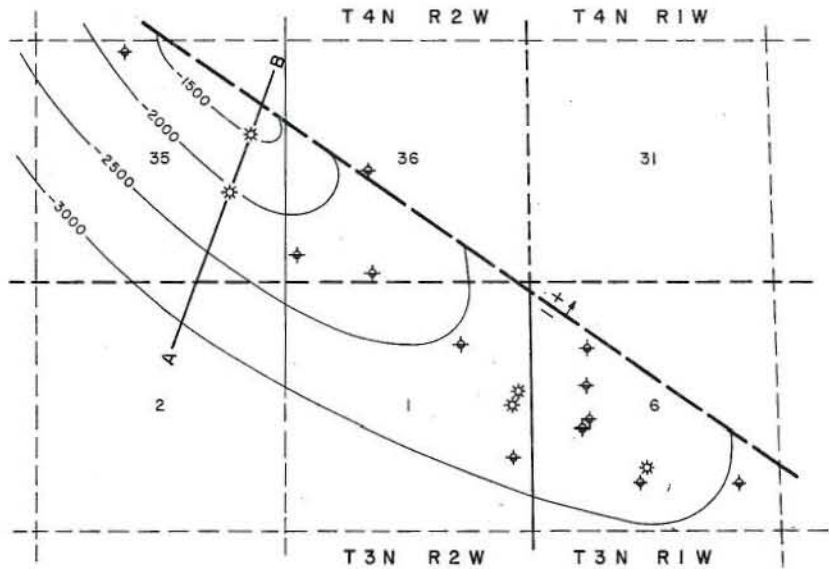
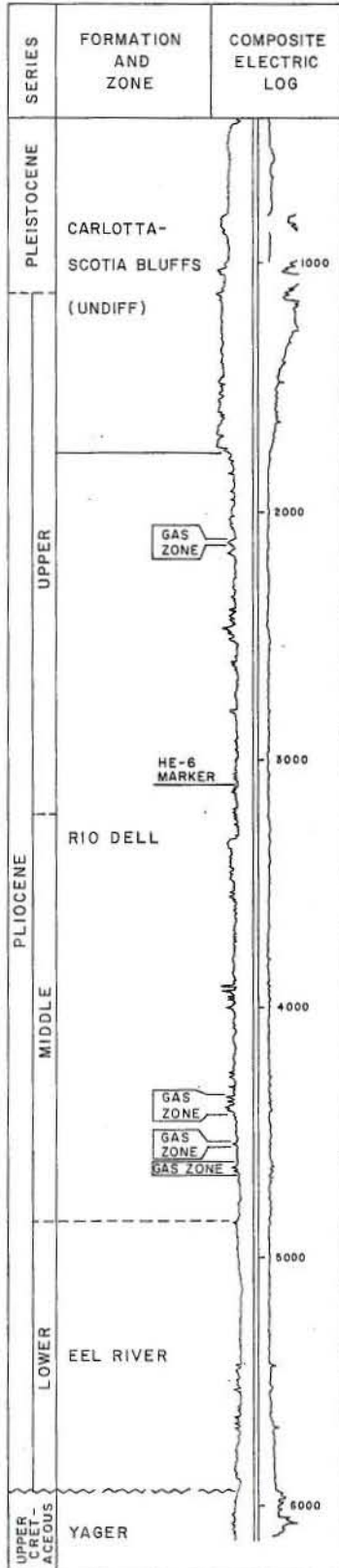
ITEM	RECLAMATION				FIELD OR AREA DATA
Discovery date .....	October 1953				
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	4,200				
Flow pressure (psi) .....	1,100				
Bean size (in.) .....	1/2				
Initial reservoir pressure (psi) .....	1,650				
Reservoir temperature (°F) .....	113				
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	950				
Formation .....	Starkey				
Geologic age .....	Late Cretaceous				
Average depth (ft.) .....	3,720				
Average net thickness (ft.) .....	25				
Maximum productive area (acres) .....	160				
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	30†				
S <sub>oi</sub> (%) .....					
S <sub>wi</sub> (%) .....	40†				
S <sub>gi</sub> (%) .....	60†				
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.558††				
Heating value (Btu/cu. ft.) .....	1,010				
Water:					
Salinity, NaCl (ppm) .....	3,900				
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)	181,114				
Year .....	1957				

Base of fresh water (ft.): 2,100

Remarks: Commercial gas deliveries began in August 1956. The field was abandoned in March 1966. Three wells were completed and cumulative gas production was 714,277 Mcf.

Selected References:

# TABLE BLUFF GAS FIELD (Abandoned)



COUNTY: HUMBOLDT

**TABLE BLUFF GAS FIELD  
(ABD)**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Zephyr Oil Co. "Leon Oro Blanco" T-2	Same as present	6 3N 1W	H	4,925	unnamed sand stringers	
Deepest well	Texaco Inc. "Eureka" 1	The Texas Co. "Eureka" 1	1 3N 2W	H	6,133		Yager Early Cretaceous

**POOL DATA**

ITEM	UNNAMED SAND STRINGERS					FIELD OR AREA DATA
Discovery date .....	July 1960					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,500					
Flow pressure (psi) .....	650					
Bean size (in.) .....	13/32					
Initial reservoir pressure (psi) .....	550-1,500					
Reservoir temperature (°F) .....	88-109					
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....	230-500					
Formation .....	Rio Del1					
Geologic age .....	Pliocene					
Average depth (ft.) .....	2,100-4,775					
Average net thickness (ft.) .....	1-40					
Maximum productive area (acres) .....	320					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	22-27***					
Soj (%) .....						
Swj (%) .....	48-53***					
Sgi (%) .....	47-52***					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.566††					
Heating value (Btu/cu. ft.) .....	1,035					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	43,219					
Year .....	1962					

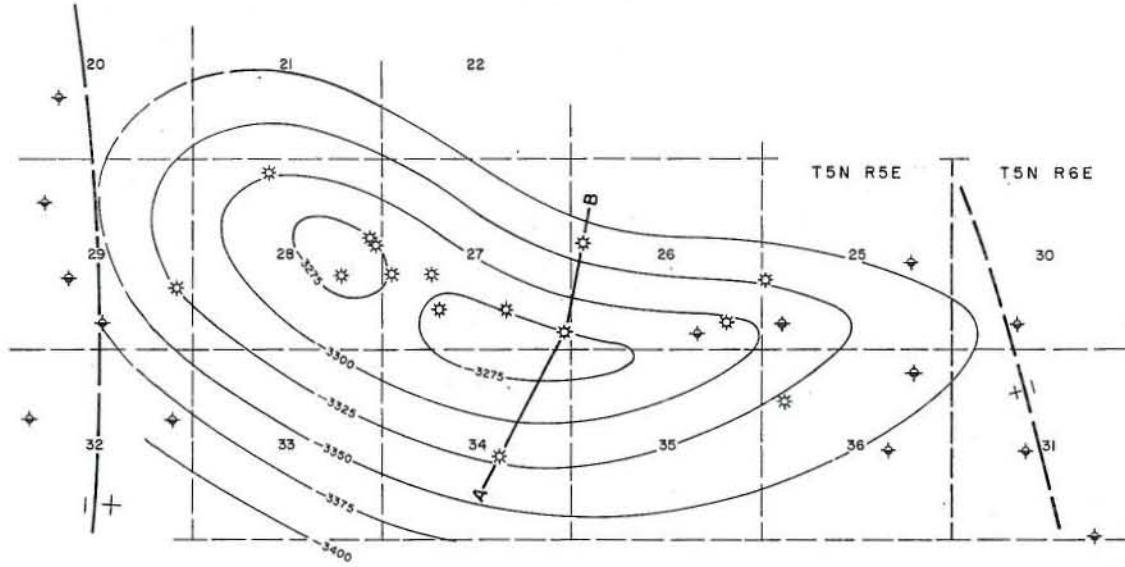
Base of fresh water (ft.): 700-1,000

Remarks: Commercial gas deliveries began in August 1962. The field was abandoned in December 1968. Five wells were completed and cumulative gas production was 108,924 Mcf.

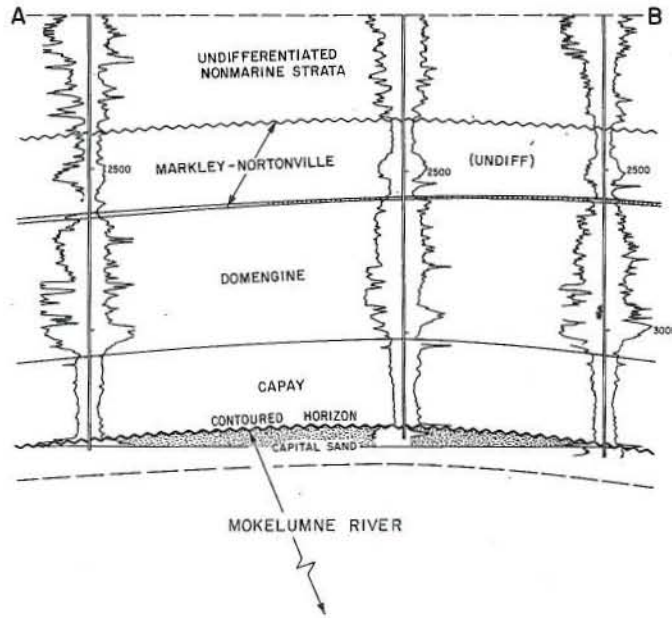
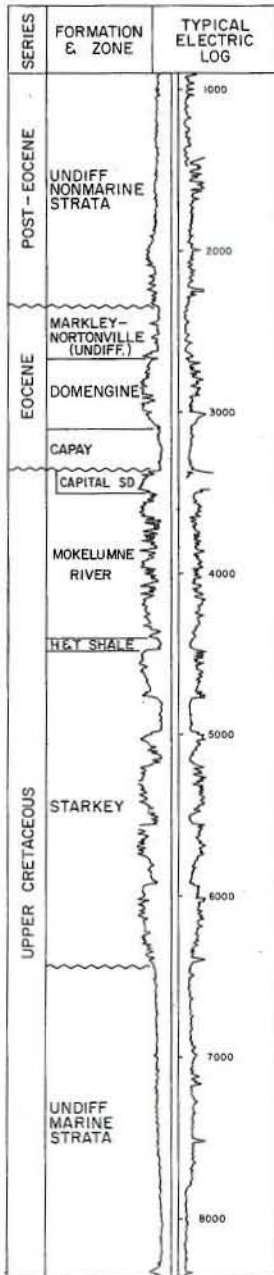
Selected References:



# THORNTON GAS FIELD ( Abandoned )



CONTOURS ON TOP OF CAPITAL SAND



COUNTY: SACRAMENTO and SAN JOAQUIN

THORNTON GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess Corp., Opr. "Capital Co." 1	Amerada Petroleum Co. "Capital Co." 1	36 5N 5E	MD	8,387	Capital	
Deepest well	Chevron U.S.A. Inc. "Dinelli-Blossom-McGillivray" 1	Standard Oil Company of California "Dinelli-Blossom-McGillivray" 1	29 5N 5E	MD	11,000		Forbes Late Cretaceous

POOL DATA

ITEM	UNNAMED <sup>a/</sup>	UNNAMED <sup>b/</sup>	CAPITAL	FIELD OR AREA DATA			
Discovery date .....	May 1961 <sup>b/</sup>	May 1970 <sup>b/</sup>	July 1943				
Initial production rates							
Oil (bbl/day) .....							
Gas (Mcf/day) .....	900	810	6,900				
Flow pressure (psi) .....	1,000	640	805				
Bean size (in.) .....	5/16	1/4	3/8				
Initial reservoir pressure (psi) .....	750	1,130	1,500				
Reservoir temperature (°F) .....	104	108	118				
Initial oil content (STB/ac.-ft.) .....							
Initial gas content (MSCF/ac.-ft.) .....							
Formation .....	270-380 Markley-Nortonville	420-590 Markley-Nortonville	780-970 Mokelumne River				
Geologic age .....	Eocene	Eocene	Late Cretaceous				
Average depth (ft.) .....	2,315	2,580	3,300				
Average net thickness (ft.) .....	15	25	30				
Maximum productive area (acres) .....							3,160

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	27-31	27-31	31-35				
So <sub>g</sub> (%) .....							
Sw <sub>i</sub> (%) .....	45-55	45-55	40-45				
Sg <sub>i</sub> (%) .....	45-55	45-55	55-60				
Permeability to air (md) .....							

RESERVOIR FLUID PROPERTIES

Oil:							
Oil gravity (°API) .....							
Sulfur content (% by wt.) .....							
Initial solution GOR (SCF/STB) .....							
Initial oil FVF (RB/STB) .....							
Bubble point press. (psia) .....							
Viscosity (cp) @ °F .....							
Gas:							
Specific gravity (air = 1.0) .....	.571††	.571††	.575††				
Heating value (Btu/cu. ft.) .....	985	985	960				
Water:							
Salinity, NaCl (ppm) .....			14,379				
T.D.S. (ppm) .....							
R <sub>w</sub> (ohm/m) (77°F) .....							

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....							
Date started .....							
Date discontinued .....							

Peak oil production (bbbl)							
Year .....							
Peak gas production, net (Mcf)							4,063,765
Year .....							1957

Base of fresh water (ft.): 600

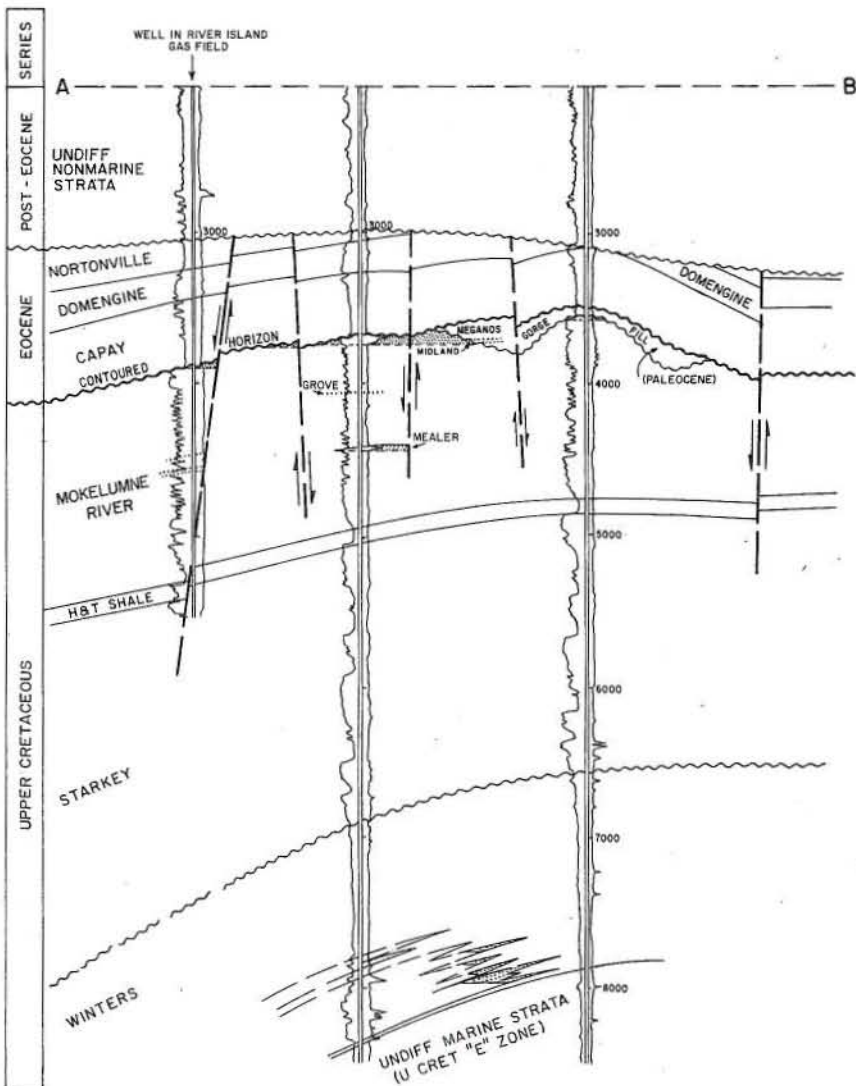
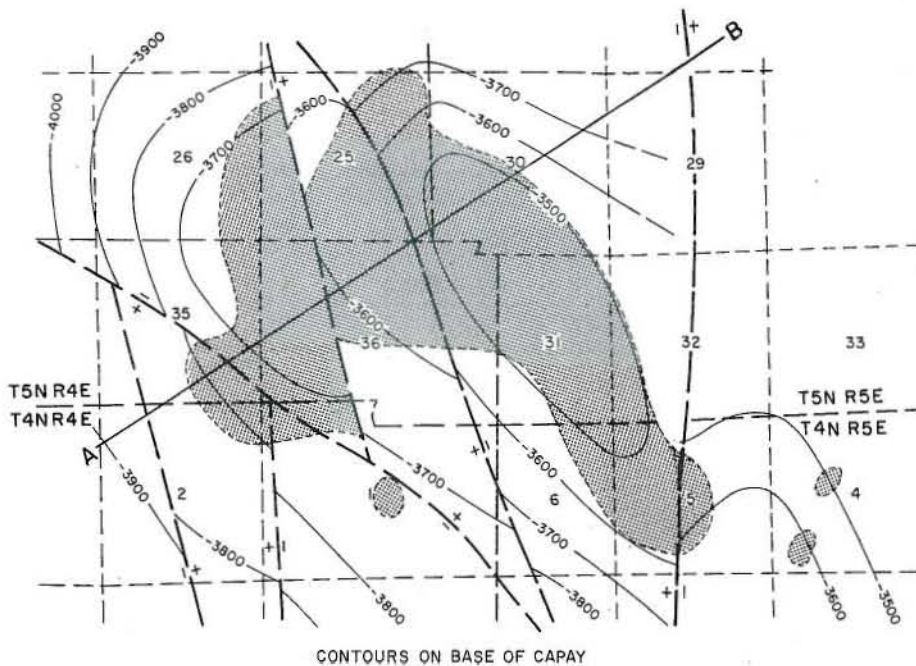
Remarks: Commercial gas deliveries began in December 1946. Abandoned September 1975. Reactivated June 1976. Abandoned October 1979. Cumulative gas production 53,641,219 Mcf. No condensate production. There were 14 completed wells.

<sup>a/</sup> Locally referred to as Deadhorse sand stringers.

<sup>b/</sup> Date of recompletion; originally completed in the Capital zone.

Selected References: Loken, K. P., 1957, Thornton Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 43, No. 1.

# WEST THORNTON-WALNUT GROVE GAS FIELD



DECEMBER 1979

COURTESY OF UNION OIL CO. OF CALIF.

COUNTY: SACRAMENTO and SAN JOAQUIN

THORNTON, WEST-WALNUT GROVE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron U.S.A. Inc. "McCormack-Williamson" 1	E. L. Doheny, Oper. "McCormack-Williamson" 1	30 SN SE	MD	8,808	Midland	
Deepest well	Chevron U.S.A. Inc. "McCormack-Williamson" 9	Standard Oil Co. of Calif. "McCormack-Williamson" 9	25 SN SE	MD	12,628		basement pre-Lt. Cret.

POOL DATA

ITEM						FIELD OR AREA DATA
	BURCHELL	DEADHORSE	NORTONVILLE STRINGERS	DOMENGINE	CAPAY STRINGERS	
Discovery date .....	August 1961	August 1959	May 1960	June 1964	March 1961	
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	700	6,140	1,550	2,170	1,100	
Flow pressure (psi) .....	825	1,025	1,025	605	1,230	
Bean size (in.) .....	12/64	1/2	1/4	3/8	3/16	
Initial reservoir pressure (psi) .....	-	1,285	1,400	1,390	1,420	
Reservoir temperature (°F) .....	106	110	120	120	124	
Initial oil content (STB/ac.-ft.) .....						
Initial gas content (MSCF/ac.-ft.) .....		500-670	680-840	660-880		
Formation .....	undiff. nonmarine post-Eocene	Markley Eocene	Nortonville Eocene	Domengine Eocene	Capay Eocene	
Geologic age .....						
Average depth (ft.) .....	2,410	2,810	2,980	2,880	3,280	
Average net thickness (ft.) .....	6	30	3-6	2-5	3	
Maximum productive area (acres) .....						3,130

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	-	28-31	26-30***	26-30		
So <sub>g</sub> (%) .....	-	45-55	35-40***	30-40		
Sw <sub>i</sub> (%) .....	-	45-55	60-65***	60-70		
S <sub>gr</sub> (%) .....	-					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	-	.563 ††	.563 ††	.575 ††	.563 ††	.575
Heating value (Btu/cu. ft.) .....	-	1,000	1,000	970	1,000	964
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						15,486,111
Year .....						1964

Base of fresh water (ft.): 800-1,300

Remarks: Commercial gas deliveries began in June 1958. Some of the gas-sand stringers in the Winters formation have been given local names by the operators.

Selected References: Silcox, J. H., 1962, West Thornton and Walnut Grove Gas Fields, Calif. in Geologic Guide to the Gas and Oil Fields of Northern Calif.: Calif. Div. of Mines and Geology Bull. 181, p. 140-148.

COUNTY: SACRAMENTO and SAN JOAQUIN

THORNTON, WEST-WALNUT GROVE GAS FIELD  
 Cont.....

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	S.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well							
Deepest well							

POOL DATA

ITEM	MEGANOS CANYON	MIDLAND	GROVE	FONG	FIELD OR AREA DATA
Discovery date .....	May 1959	July 1956	May 1966	October 1967	
Initial production rates					
Oil (bbl/day) .....	2,125	1,750	2,350	3,065	
Gas (Mcf/day) .....	1,600	1,135	1,410	1,450	
Flow pressure (psi) .....	1/4	1/4	16/64	12/64	
Bean size (in.) .....					
Initial reservoir pressure (psi) .....	1,540	1,605	1,790	1,815	
Reservoir temperature (°F) .....	125	125	130	130	
Initial oil content (STB/ac.-ft.) .....		820-990	740-900	750-920	
Initial gas content (MSCF/ac.-ft.) .....		Mokelumne River	Mokelumne River	Mokelumne River	
Formation .....	Meganos Canyon fill	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Geologic age .....	Paleocene				
Average depth (ft.) .....	3,680	3,560	4,060	4,240	
Average net thickness (ft.) .....	15	60	10	35	
Maximum productive area (acres) .....					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....		26-29	25-28 †	25-28 †	
So <sub>v</sub> (%) .....		30-35	40-45 †	40-45 †	
Sw <sub>i</sub> (%) .....		65-70	55-60 †	55-60 †	
S <sub>gr</sub> (%) .....					
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (*API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....		.580 ††	.575 ††	.582 ††	
Heating value (Btu/cu. ft.) .....		968	970	955	
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					

Base of fresh water (ft.):

Remarks:

Selected References:

DATE:

† Log derived value. †† Calculated value.

CALIFORNIA DIVISION OF OIL AND GAS

COUNTY: SACRAMENTO and SAN JOAQUIN

THORNTON, WEST-WALNUT GROVE GAS FIELD  
Cont.....

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well							
Deepest well							

POOL DATA

ITEM					FIELD OR AREA DATA
	MEALER	UNNAMED			
Discovery date .....	July 1958	July 1959			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	2,400	2,100			
Flow pressure (psi) .....	1,580	2,465			
Bean size (in.) .....	1/4	12/64			
Initial reservoir pressure (psi) .....	2,010	3,550-3,900			
Reservoir temperature (°F) .....	119	152-154			
Initial oil content (STB/ac-ft.) .....					
Initial gas content (MSCF/ac-ft.) .....	650-1,000	1,400-1,700			
Formation .....	Mokelumne River	Winters			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	4,420	7,460-8,300			
Average net thickness (ft.) .....	25	10-30			
Maximum productive area (acres) .....					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	21-27 †	24-28			
So <sub>i</sub> (%) .....	40-50 †	35-45			
Sw <sub>i</sub> (%) .....	50-60 †	55-65			
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.585-.566 ††	.600 ††			
Heating value (Btu/cu. ft.) .....	940-980	920			
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

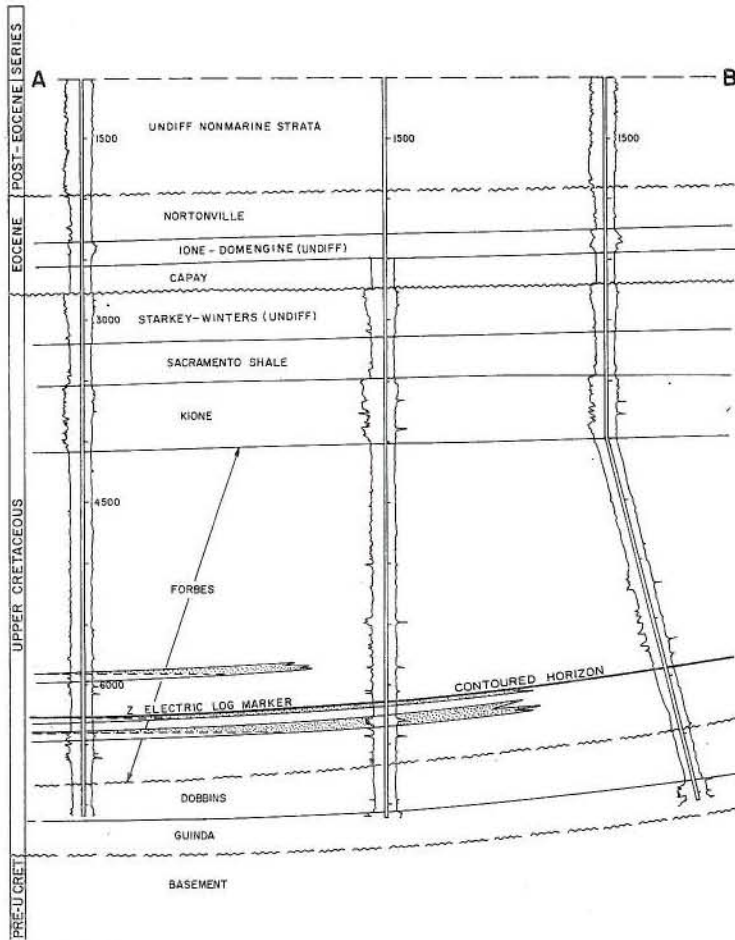
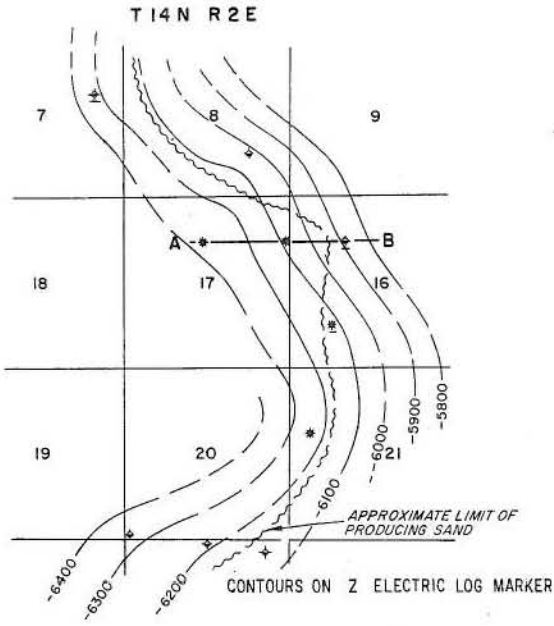
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					

Base of fresh water (ft.):

Remarks:

Selected References:

# TISDALE GAS FIELD



COUNTY: SUTTER

TISDALE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	T. A. Atkinson "Atlantic-Glusti" 1	Same as present	17 14N 2E	MD	7,115	Forbes	
Deepest well	Atlantic Oil Co. "Lamb" 2	Same as present	17 14N 2E	MD	7,542		Guinda Late Cretaceous

POOL DATA

ITEM	FORBES					FIELD OR AREA DATA
Discovery date .....	August 1961					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	150-8,580 <sup>a/</sup>					
Flow pressure (psi) .....	2,540-2,480 <sup>a/</sup>					
Bean size (in.) .....	21/64 <sup>a/</sup>					
Initial reservoir pressure (psi) .....	3,350					
Reservoir temperature (°F) .....	122					
Initial oil content (STB/ac-ft.) .....	1,700-1,900					
Initial gas content (MSCF/ac-ft.) .....	Forbes					
Formation .....	Late Cretaceous					
Geologic age .....						
Average depth (ft.) .....	6,200					
Average net thickness (ft.) .....	2-20					
Maximum productive area (acres) .....	640					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	24-32					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	48-55					
Sg <sub>i</sub> (%) .....	45-52					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....						
Heating value (Btu/cu. ft.) .....	925-1,000					
Water:						
Salinity, NaCl (ppm) .....	16,400-18,100					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	1,006,041					
Year .....	1968					

Base of fresh water (ft.): 600

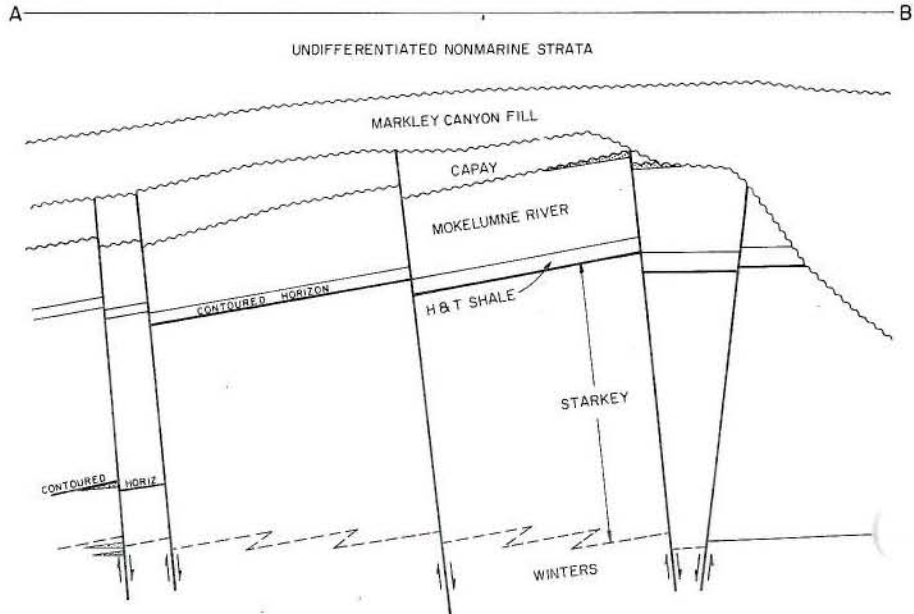
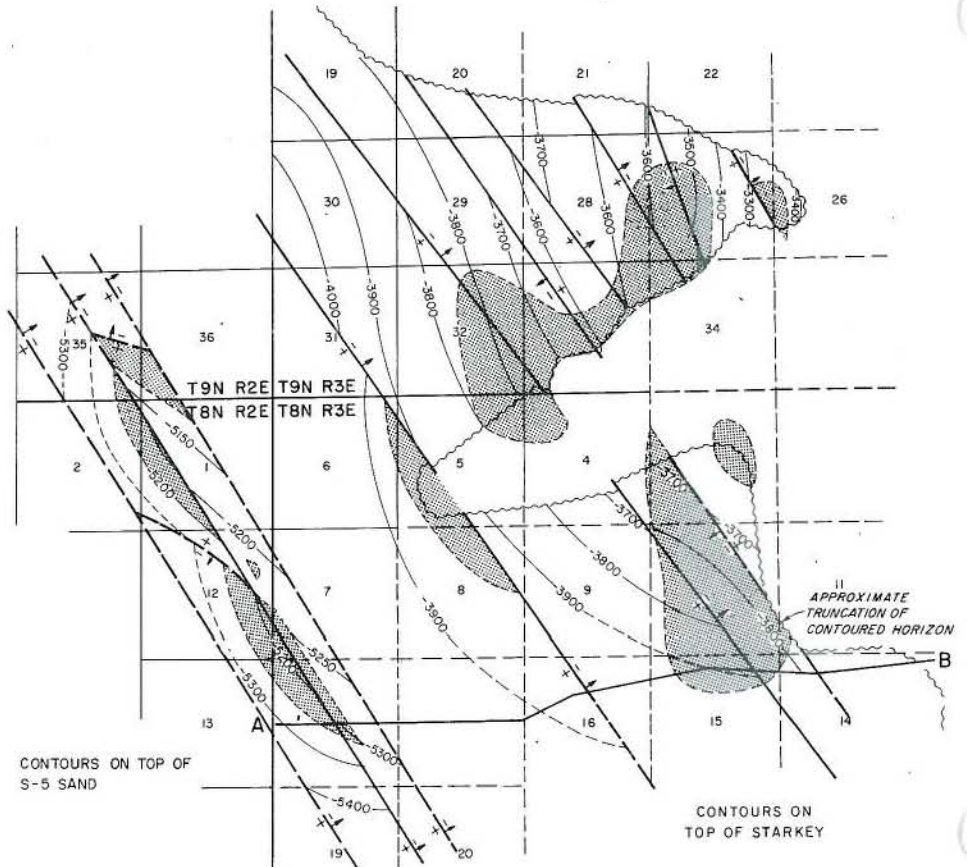
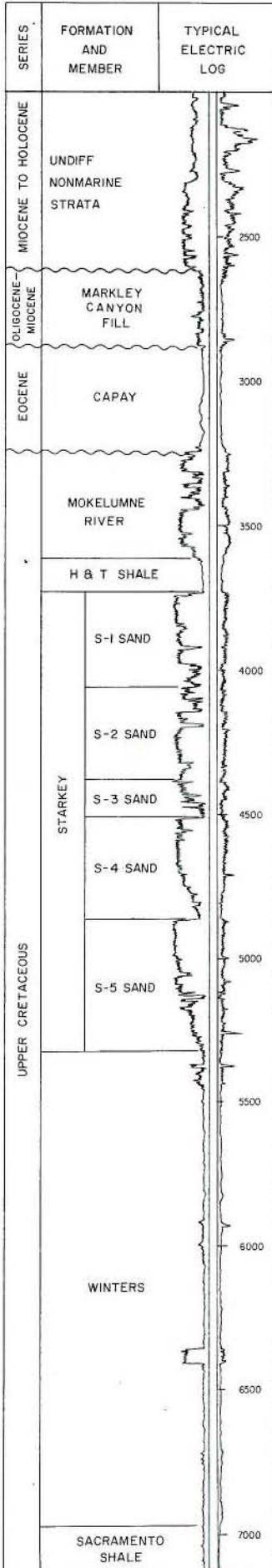
Remarks: Commercial gas deliveries began in April 1963.

<sup>a/</sup> Well dually completed from two intervals within the Forbes formation.

Selected References: Weddle, J. R., 1969, Tisdale Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 54, No. 2.



# TODHUNTERS LAKE GAS FIELD



COUNTY: YOLO

TODHUNTERS LAKE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Getty Oil Co. "Reavis and Baker" 1	Tidewater Oil Co. "Reavis and Baker" 1	33 9N 3E	MD	5,000	Starkey	
Deepest well	Getty Oil Co. "I.O.C." 2	Same as present	33 9N 3E	MD	7,000		Sacramento shale Late Cretaceous

POOL DATA

ITEM	POOL DATA			FIELD OR AREA DATA
	MOKELUMNE RIVER	STARKEY	WINTERS	
Discovery date .....	October 1968	May 1967	July 1972	
Initial production rates				
Oil (bbl/day) .....				
Gas (Mcf/day) .....	4,100	5,360	4,420	
Flow pressure (psi) .....	840	1,110	1,850	
Bean size (in.) .....	30/64	1/2	5/16	
Initial reservoir pressure (psi) .....	1,420	1,580-2,352	2,180-2,276	
Reservoir temperature (°F) .....	118 <u>a/</u>	122-126 <u>a/</u>	147 <u>a/</u>	
Initial oil content (STB/ac.-ft.) .....	560-1,000	750-1,800	750-1,200	
Initial gas content (MSCF/ac.-ft.) .....				
Formation .....	Mokelumne River	Starkey	Winters	
Geologic age .....	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Average depth (ft.) .....	3,150	4,000-5,850	5,440-6,440	
Average net thickness (ft.) .....	30-60	5-55	20-40	
Maximum productive area (acres) .....				3,015

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	22-35 †	27-35 †	22-28***	
So <sub>i</sub> (%) .....	30-40 †	25-40	35-45***	
Sw <sub>i</sub> (%) .....	60-70 †	60-75	60-75***	
Sg <sub>i</sub> (%) .....				
Permeability to air (md) .....				

RESERVOIR FLUID PROPERTIES

Oil:				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution GOR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	.606	.606	.603-.680	
Heating value (Btu/cu. ft.) .....	890	900	695-909	
Water:				
Salinity, NaCl (ppm) .....	-	6,160	-	
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				

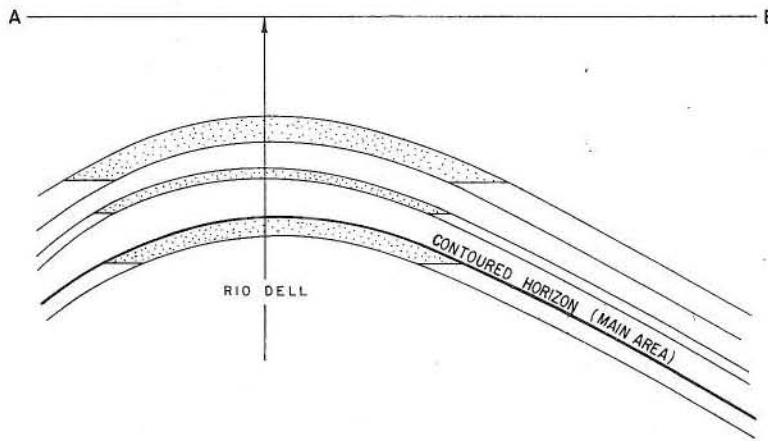
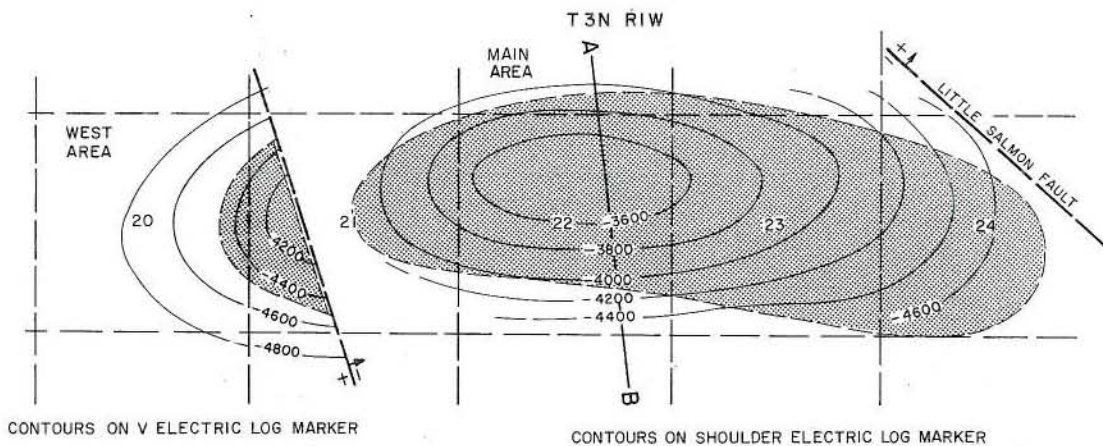
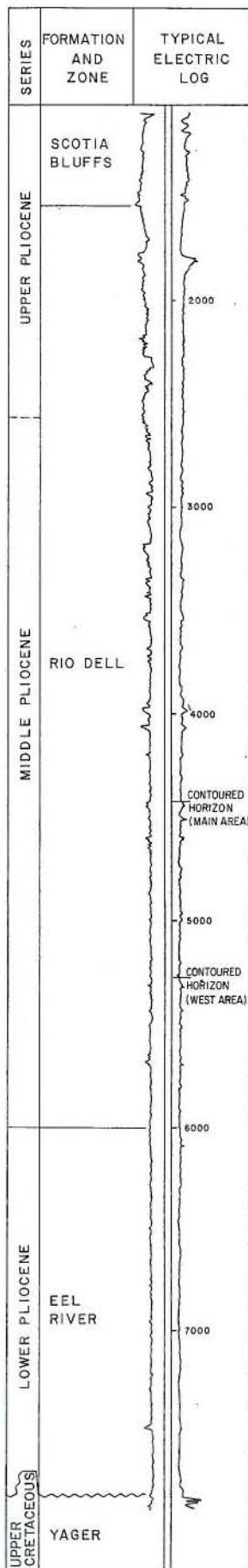
Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				11,912,060
Year .....				1975

Base of fresh water (ft.): 2,100-2,500

Remarks: Commercial gas deliveries began in May 1968. The 695 Btu heating value in the Winters zone is due to high nitrogen content.  
a/ All temperatures are derived from adjacent fields.

Selected References: Williams, P. A., 1970, Todhunters Lake Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 56, No. 1.

# TOMPKINS HILL GAS FIELD



COUNTY: HUMBOLDT

**TOMPKINS HILL GAS FIELD**  
MAIN AREA

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Texaco Inc. "Tompkins Hill Unit Plan" 2	The Texas Co. "Eureka" 2	22 3N 1W	H	7,708	Rio Dell	
Deepest well	Texaco Inc. "Holmes-Eureka" 3	The Texas Co. "Holmes-Eureka" 3	22 3N 1W	H	7,852		Yager Early Cretaceous

**POOL DATA**

ITEM	RIO DELL					FIELD OR AREA DATA
Discovery date .....	September 1937					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,400					
Flow pressure (psi) .....	1,100					
Bean size (in.) .....	13/64					
Initial reservoir pressure (psi) .....	890-2,450					
Reservoir temperature (°F) .....	116-131					
Initial oil content (STB/ac-ft.) .....						
Initial gas content (MSCF/ac-ft.) .....	400-1,100					
Formation .....	Rio Dell					
Geologic age .....	Pliocene					
Average depth (ft.) .....	2,100-5,800					
Average net thickness (ft.) .....	1-50					
Maximum productive area (acres) .....	1,400					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	26					
So <sub>g</sub> (%) .....						
Sw <sub>g</sub> (%) .....	40					
S <sub>gg</sub> (%) .....	60					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....						
Heating value (Btu/cu. ft.) .....	1,035					
Water:						
Salinity, NaCl (ppm) .....	10,785-22,598					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	3,668,947					
Year .....	1972					

Base of fresh water (ft.): 1,400-1,900

Remarks: Formerly known as Eureka Gas field. Commercial gas deliveries began in November 1938.

Selected References: Eureka Gas Field in Estimate of the Natural Gas Reserves of the State of Calif. as of January 1, 1941; Railroad Commission of the State of Calif. and Dept. of Natural Resources, Div. of Oil and Gas, Case No. 4591, Special Study No. S-258, p. 233-235 (1942).  
Ogle, B. A., 1953, Geology of Eel River Area, Humboldt County, Calif.: Calif. Div. of Mines Bull. 164, p. 79.

COUNTY: HUMBOLDT

**TOMPKINS HILL GAS FIELD  
WEST AREA**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Argo Petroleum Corp. "Edwards-Vicenus" 1	King Resources Co. "Edwards Vicenus" 1	20 3N 1W	H	6,046 <sup>a/</sup>	Rio Dell	
Deepest well	Argo Petroleum Corp. "Edwards-Vicenus" 3	Same as present	20 3N 1W	H	8,127 <sup>b/</sup>		Rio Dell Pliocene

**POOL DATA**

ITEM	RIO DELL					FIELD OR AREA DATA
Discovery date .....	December 1977					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	2,349					
Flow pressure (psi) .....	2,512					
Bean size (in.) .....	3/16					
Initial reservoir pressure (psi) .....	3,575					
Reservoir temperature (°F) .....	122					
Initial oil content (STB/ac.-ft.) .....	1,500					
Initial gas content (MSCF/ac.-ft.) .....	Rio Dell					
Formation .....	Pliocene					
Geologic age .....	5,920					
Average depth (ft.) .....	20					
Average net thickness (ft.) .....	40					
Maximum productive area (acres) .....						

**RESERVOIR ROCK PROPERTIES**

Porosity (%) .....	27					
So <sub>g</sub> (%) .....	48					
Sw <sub>i</sub> (%) .....	52					
Sg <sub>i</sub> (%) .....	12					
Permeability to air (md) .....						

**RESERVOIR FLUID PROPERTIES**

Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	1,029					
Heating value (Btu/cu. ft.) .....						
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

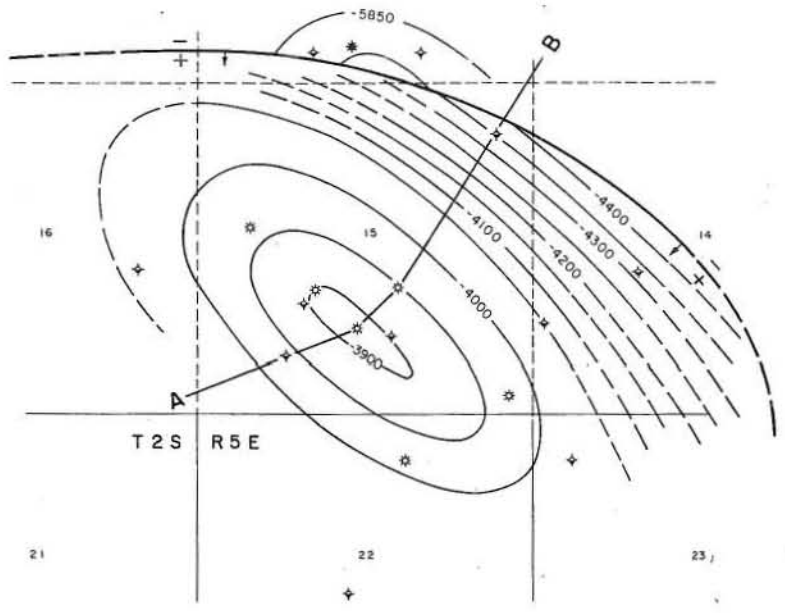
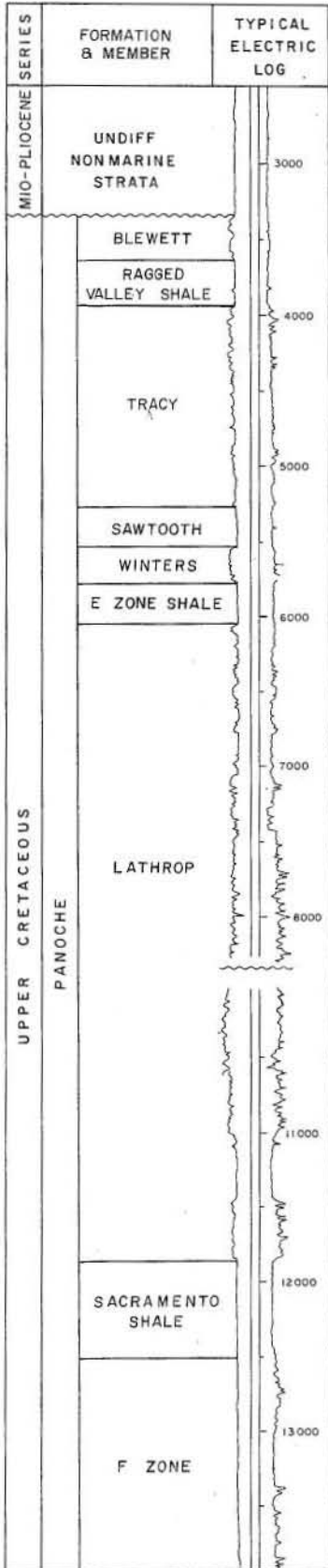
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....	15,370					
	1979					

Base of fresh water (ft.): 1,900-2,100

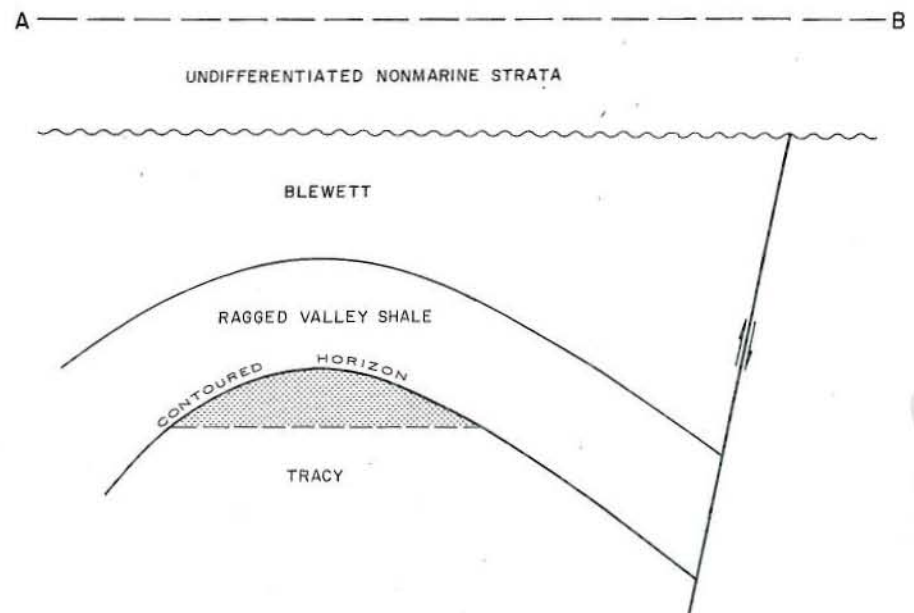
Remarks: Commercial production began in February 1979.  
<sup>a/</sup> Directional well, true vertical depth is 5,994 feet.  
<sup>b/</sup> Directional well, true vertical depth is 7,712 feet.

Selected References:

# TRACY GAS FIELD



CONTOURS ON TOP OF TRACY



COUNTY: SAN JOAQUIN

TRACY GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Amerada Hess Corp. "F.D.L." 2	Amerada Petroleum Corp. "F.D.L." 2	15 2S SE	MD	3,994	Tracy	
Deepest well	Amerada Hess Corp. "Tracy Community 1" 1	Amerada Petroleum Corp. "Tracy Community 1" 1	15 2S SE	MD	13,832		Panoche Late Cretaceous

POOL DATA

ITEM	POOL DATA				FIELD OR AREA DATA
	TRACY	BLEWETT <sup>a/</sup>			
Discovery date .....	August 1935	November 1977			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	35,000	698			
Flow pressure (psi) .....	1,400	500			
Bean size (in.) .....	1 1/2	1/4			
Initial reservoir pressure (psi) .....	1,854	1,850			
Reservoir temperature (°F) .....	134	138			
Initial oil content (STB/ac.-ft.) .....	1,050	580			
Initial gas content (MSCF/ac.-ft.) .....					
Formation .....	Panoche	Panoche			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	5,900	5,200			
Average net thickness (ft.) .....	40	10			
Maximum productive area (acres) .....					390
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	28	20			
So <sub>g</sub> (%) .....					
Sw <sub>i</sub> (%) .....	30	45			
Sg <sub>g</sub> (%) .....	70	55			
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.593	.649			
Heating value (Btu/cu. ft.) .....	950	808			
Water:					
Salinity, NaCl (ppm) .....	6,350- 8,560	19,200			
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbi)					
Year .....					
Peak gas production, net (Mcf)					3,012,083
Year .....					1936

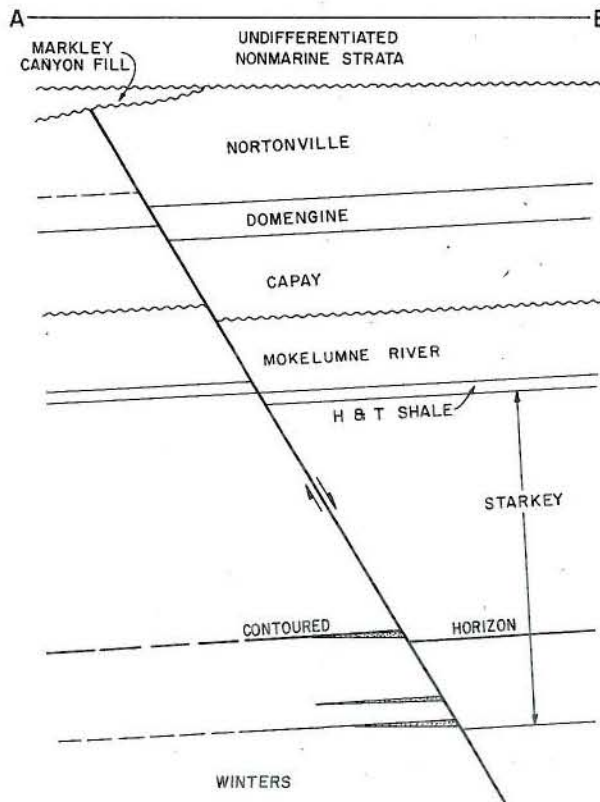
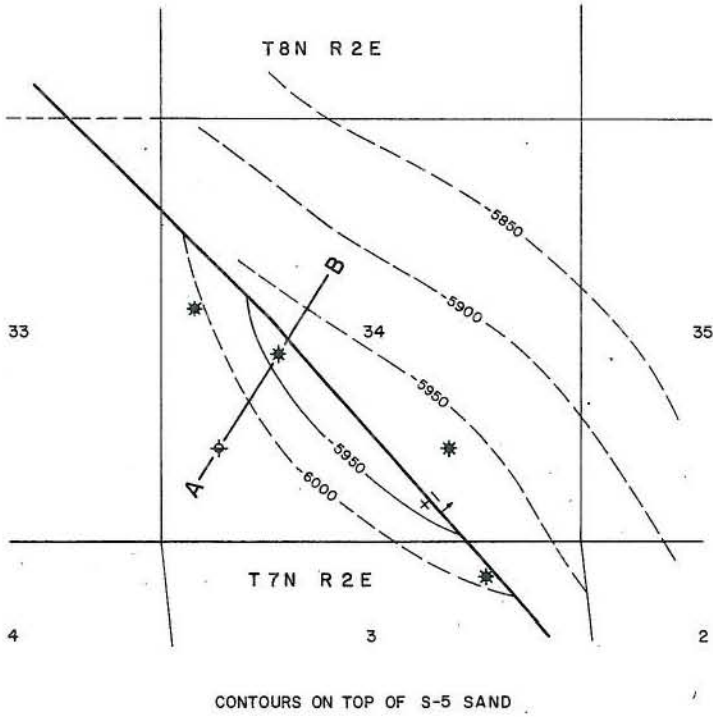
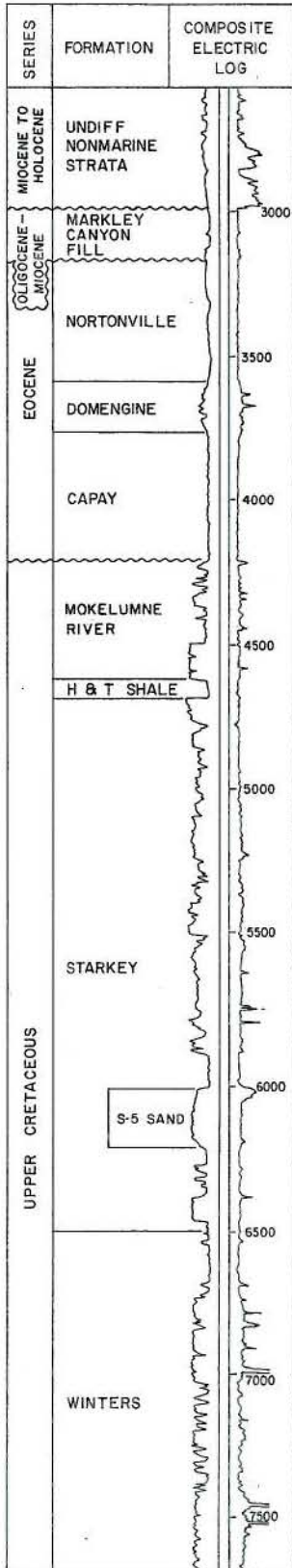
Base of fresh water (ft.): 1,200

Remarks: First commercial gas field in Northern California and first field in California to produce gas commercially from a Cretaceous zone. Commercial gas deliveries began in September 1935. The field was abandoned November 1964 and reactivated in November 1977.

<sup>a/</sup> Production began in February 1980.

Selected References: Hunter, G. W., 1957, Tracy Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 43, No. 1.

# TREMONT GAS FIELD





COUNTY: SOLANO

TREMONT GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Capitol Oil Corp. "Hamel-Thomas" 1	Same as present	34 8N 2E	MD	8,051	Starkey	Winters Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	POOL DATA				FIELD OR AREA DATA
	STARKEY	WINTERS			
Discovery date .....	March 1974	March 1974			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	3,267	3,161			
Flow pressure (psi) .....	2,130	2,070			
Bean size (in.) .....	1/4	1/4			
Initial reservoir pressure (psi) .....	2,550	2,810			
Reservoir temperature (°F) .....	126	140			
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	1,400-1,700	1,000-1,300			
Formation .....	Starkey	Winters			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	6,050	6,560			
Average net thickness (ft.) .....	20	7			
Maximum productive area (acres) .....					230

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	28-32***	24-28***			
So <sub>g</sub> (%) .....					
Sw <sub>i</sub> (%) .....	30-35***	40-45***			
Sg <sub>g</sub> (%) .....	65-70***	55-60***			
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.630	.630			
Heating value (Btu/cu. ft.) .....	873	852			
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

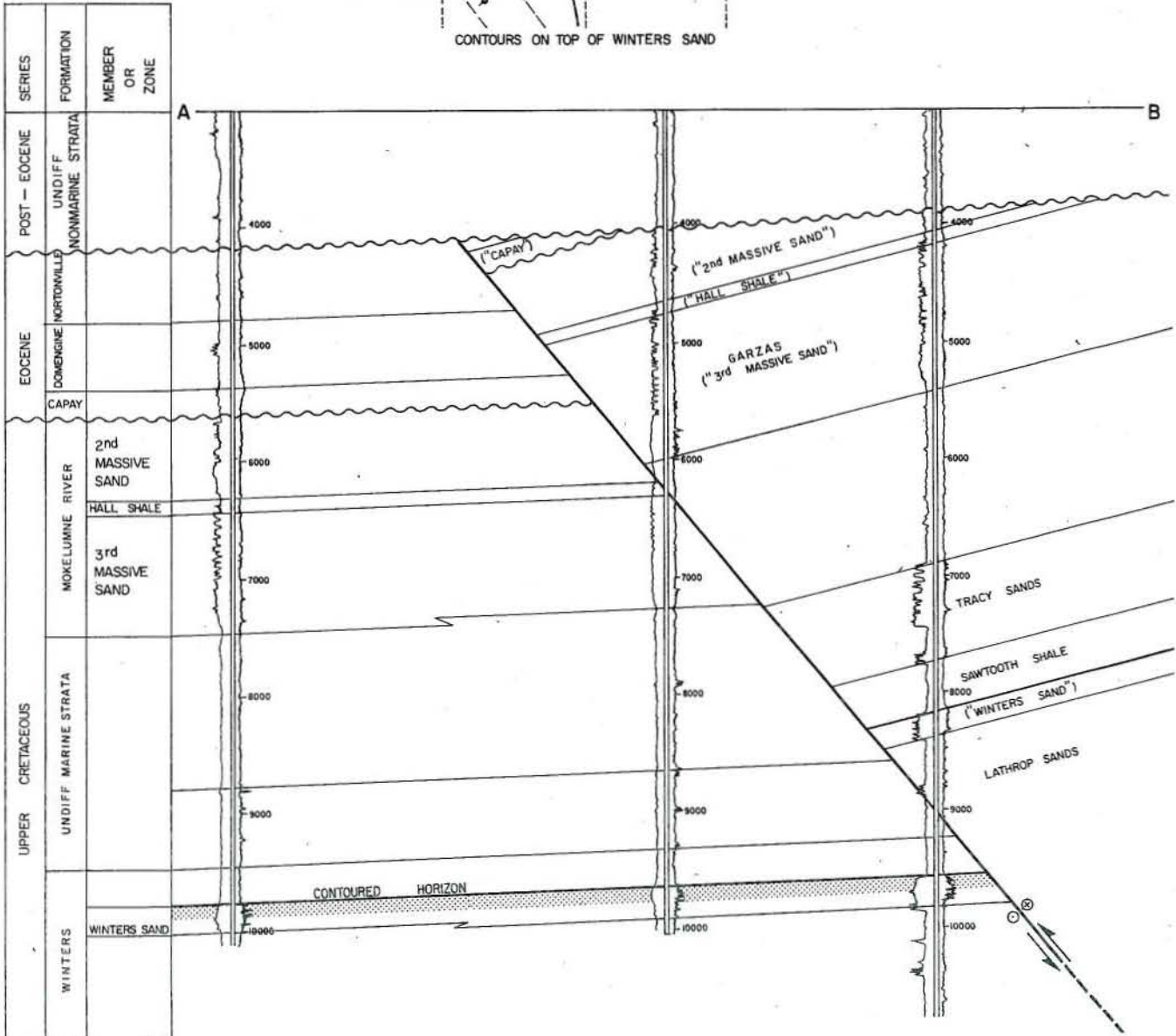
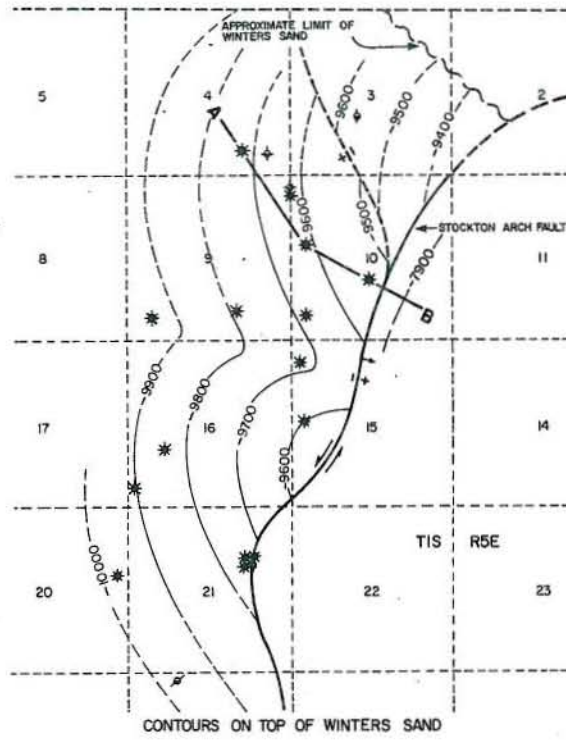
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					1,437,548
Year .....					1976

Base of fresh water (ft.): 3,000

Remarks: Commercial gas deliveries began in January 1976.

Selected References:

# UNION ISLAND GAS FIELD



COUNTY: SAN JOAQUIN

UNION ISLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Union Oil Co. of Calif. "Sonol Securities" 1-A	Same as present	10 1S SE	MD	10,000	Winters	
Deepest well	Union Oil Co. of Calif. "Sonol Securities" 7	Same as present	10 1S SE	MD	12,527		E-zone Late Cretaceous

POOL DATA

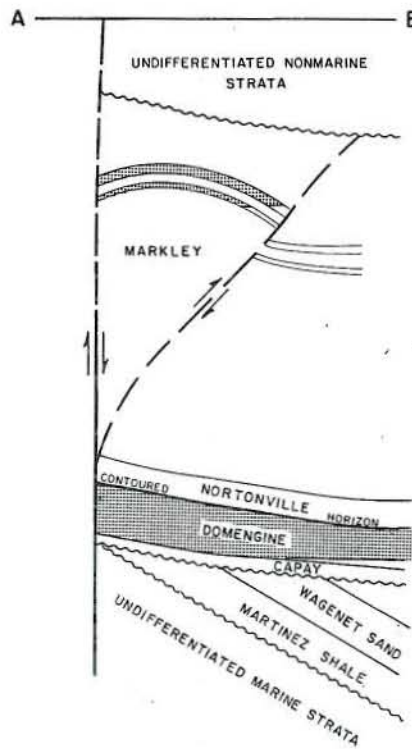
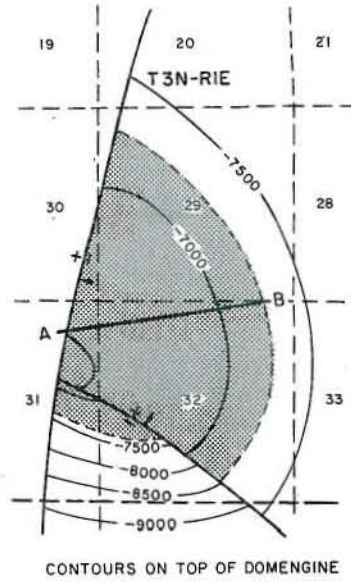
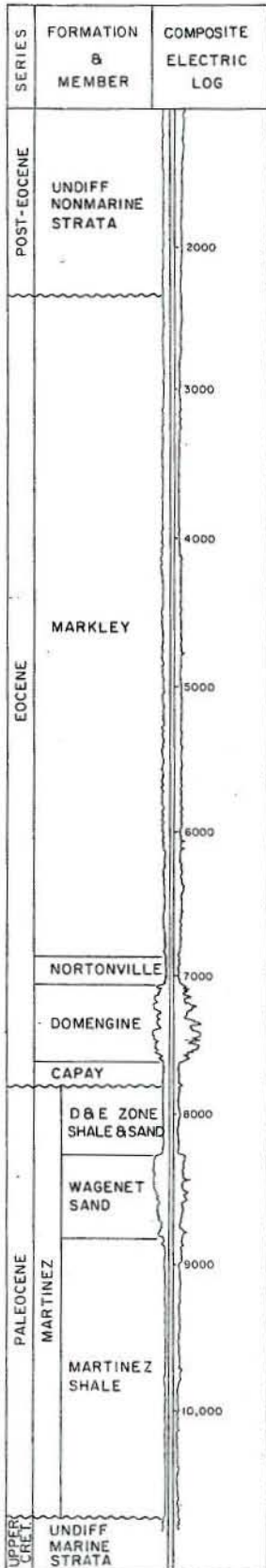
ITEM	WINTERS					FIELD OR AREA DATA
Discovery date .....	February 1972					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	4,450					
Flow pressure (psi) .....	3,300					
Bean size (in.) .....	1/4					
Initial reservoir pressure (psi) .....	5,040					
Reservoir temperature (°F) .....	218					
Initial oil content (STB/ac.-ft.) .....	1,100-1,300					
Initial gas content (MSCF/ac.-ft.) .....	Winters					
Formation .....	Late Cretaceous					
Geologic age .....	9,700					
Average depth (ft.) .....	150					
Average net thickness (ft.) .....	1,680					
Maximum productive area (acres) .....						
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	18-20					
So <sub>v</sub> (%) .....						
Sw <sub>i</sub> (%) .....	38-40					
Sg <sub>i</sub> (%) .....	60-62					
Permeability to air (md) .....	70-200					
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.616					
Heating value (Btu/cu. ft.) .....	870					
Water:						
Salinity, NaCl (ppm) .....	39,900					
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl) .....	22,795,470					
Year .....	1977					
Peak gas production, net (Mcf) .....						
Year .....						

Base of fresh water (ft.): 300

Remarks: Small amounts (4 bbl/day) of 29° API gravity condensate are also produced.

Selected References:

# VAN SICKLE ISLAND GAS FIELD



COUNTY: SOLANO

VAN SICKLE ISLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron USA Inc. "Feykert" 1	Standard Oil of Calif. "Feykert" 1	32 3N 1E	MD	11,040	Nortonville and Domengine	Starkey Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

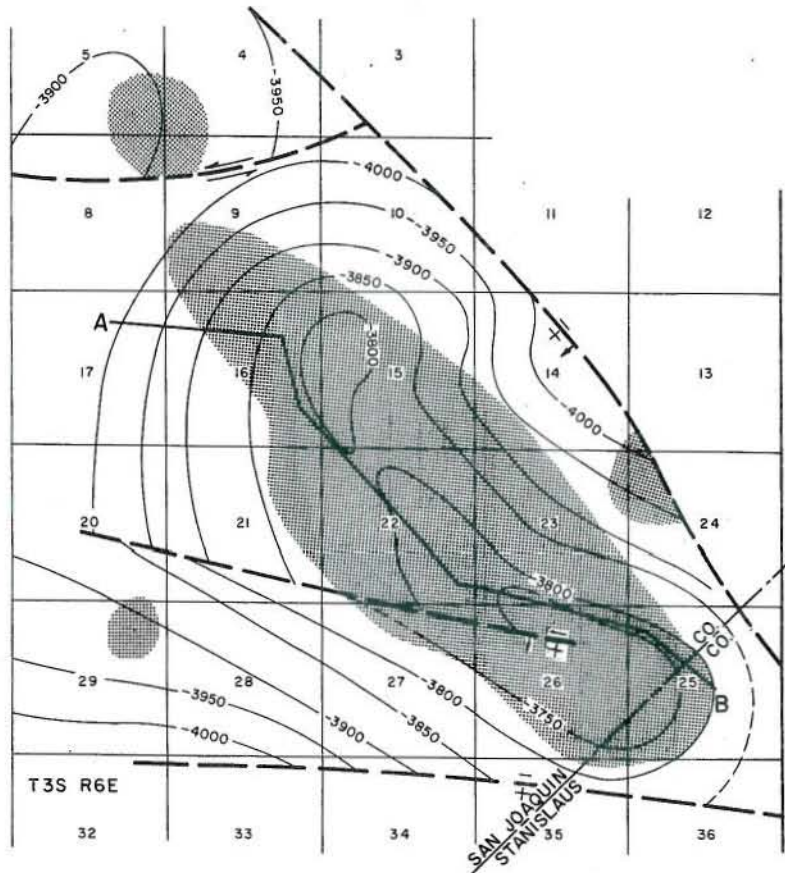
ITEM	POOL DATA			FIELD OR AREA DATA
	MARKLEY	NORTONVILLE <u>±</u> /	DOMENGINE <u>±</u> /	
Discovery date .....	September 1973	June 1968	June 1968	
Initial production rates				
Oil (bbl/day) .....			1,665	
Gas (Mcf/day) .....	1,700		1,110	
Flow pressure (psi) .....	750		1/4	
Bean size (in.) .....	5/16			
Initial reservoir pressure (psi) .....	1,450	2,980	3,000	
Reservoir temperature (°F) .....	124	153	153	
Initial oil content (STB/ac.-ft.) .....	480-650	720	940	
Initial gas content (MSCF/ac.-ft.) .....				
Formation .....	Markley	Nortonville	Domengine	
Geologic age .....	Eocene	Eocene	Eocene	
Average depth (ft.) .....	3,250	6,760	6,800	
Average net thickness (ft.) .....	45	10	150	
Maximum productive area (acres) .....				350
<b>RESERVOIR ROCK PROPERTIES</b>				
Porosity (%) .....	20-25***	15	18	
S <sub>oi</sub> (%) .....				
S <sub>wi</sub> (%) .....	40-45***	45	40	
S <sub>gi</sub> (%) .....	55-60***	55	60	
Permeability to air (md) .....				
<b>RESERVOIR FLUID PROPERTIES</b>				
Oil:				
Oil gravity (°API) .....				
Sulfur content (% by wt.) .....				
Initial solution				
COR (SCF/STB) .....				
Initial oil FVF (RB/STB) .....				
Bubble point press. (psia) .....				
Viscosity (cp) @ °F .....				
Gas:				
Specific gravity (air = 1.0) .....	.602	.602	.602	
Heating value (Btu/cu. ft.) .....	1,030	1,032	1,030	
Water:				
Salinity, NaCl (ppm) .....			10,272	
T.D.S. (ppm) .....				
R <sub>w</sub> (ohm/m) (77°F) .....				
<b>ENHANCED RECOVERY PROJECTS</b>				
Enhanced recovery projects .....				
Date started .....				
Date discontinued .....				
Peak oil production (bbl)				
Year .....				
Peak gas production, net (Mcf)				
Year .....				1,731,445 1972

Base of fresh water (ft.): Above 250

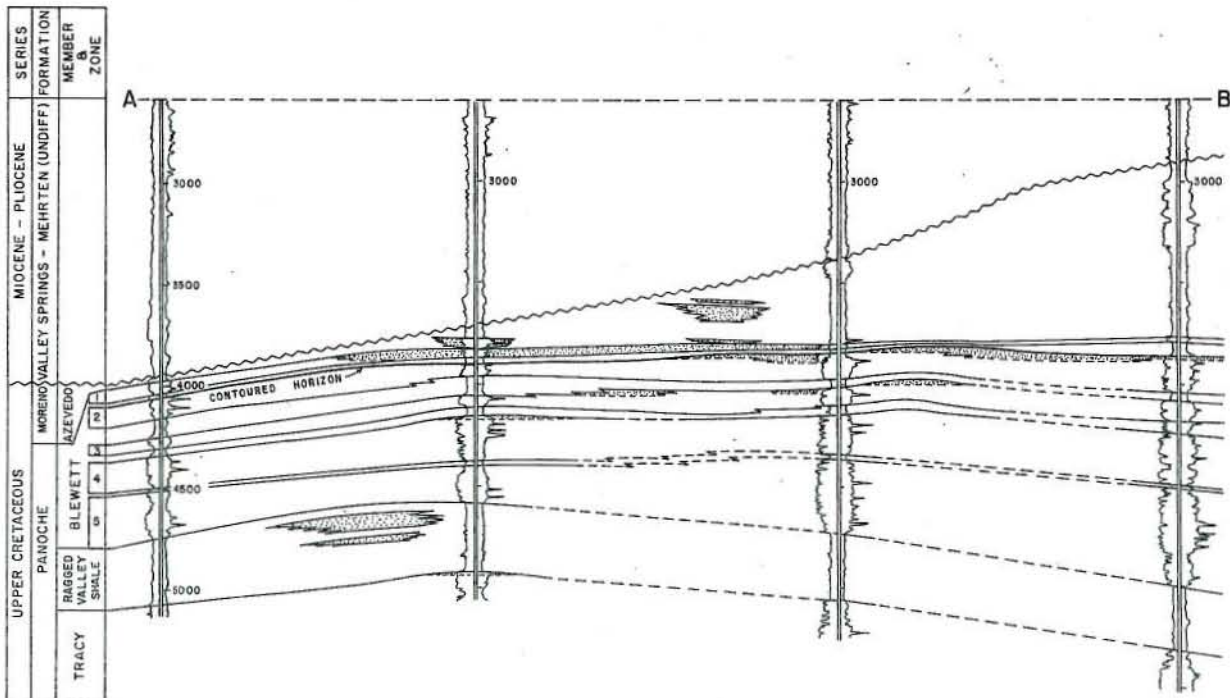
Remarks: Commercial gas deliveries began in April 1964. Cumulative condensate production through 1979 was 22,830 barrels.  
±/ Commingled Nortonville and Domengine production.

Selected References:

# VERNALIS GAS FIELD



CONTOURS ON TOP OF BLEWETT 2 SAND



COUNTY: SAN JOAQUIN and STANISLAUS

VERNALIS GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Chevron USA, Inc. "Blewett Comm." 1	Standard Oil Co. of Calif. "Blewett Comm." 1	14 3S 6E	MD	3,872	Blewett	
Deepest well	W. E. Strangman "Navarra" 1	Inter-American Resources Dev. Co. "Navarra" 1	29 3S 6E	MD	11,602		F-zone Late Cretaceous

POOL DATA

ITEM	POOL DATA					FIELD OR AREA DATA
	BANTA	AZEVEDO	BLEWETT	"RAGGED VALLEY SILT"	TRACY	
Discovery date .....	September 1959	January 1959	January 1941	May 1960	July 1959	
Initial production rates						
Oil (bbl/day) .....	4,900	795/370 <u>B</u> /	9,700	1,110	5,500	
Gas (Mcf/day) .....	850	1,440/1,020 <u>B</u> /	1,140	1,000	950	
Flow pressure (psi) .....	1/2	1/8 / 5/8 <u>B</u> /	5/8	1/4	1/2	
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,425	1,680	1,765	2,110	2,220	
Reservoir temperature (°F) .....	107	118	120	129	130	
Initial oil content (STB/ac.-ft.) .....	910	710-860	800-970	870	920-1,100	
Initial gas content (MSCF/ac.-ft.) .....	Valley Sprs.-Mehrten	Moreno	Panoche	Panoche	Panoche	
Formation .....	Miocene-Pliocene	Late Cretaceous	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Geologic age .....	3,000	3,600	3,800	4,650	4,925	
Average depth (ft.) .....	25	40	80	40	10	
Average net thickness (ft.) .....						
Maximum productive area (acres) .....						4,050
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	30*	25-28	27-30	25*	25-28	
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	30*	40-45	40-45	45*	40-45	
Sg <sub>g</sub> (%) .....	70*	55-60	55-60	55*	55-60	
Permeability to air (md) .....			70-320			
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.593††	.597††	.597††	.597††	.599††	
Heating value (Btu/cu. ft.) .....	930	920	920	920	915	
Water:						
Salinity, NaCl (ppm) .....	2,100	500-3,400	500-3,400	500-3,400	500-3,400	
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbi) .....						
Year .....						
Peak gas production, net (Mcf) .....						8,273,021
Year .....						1962

Base of fresh water (ft.): 800-1,050

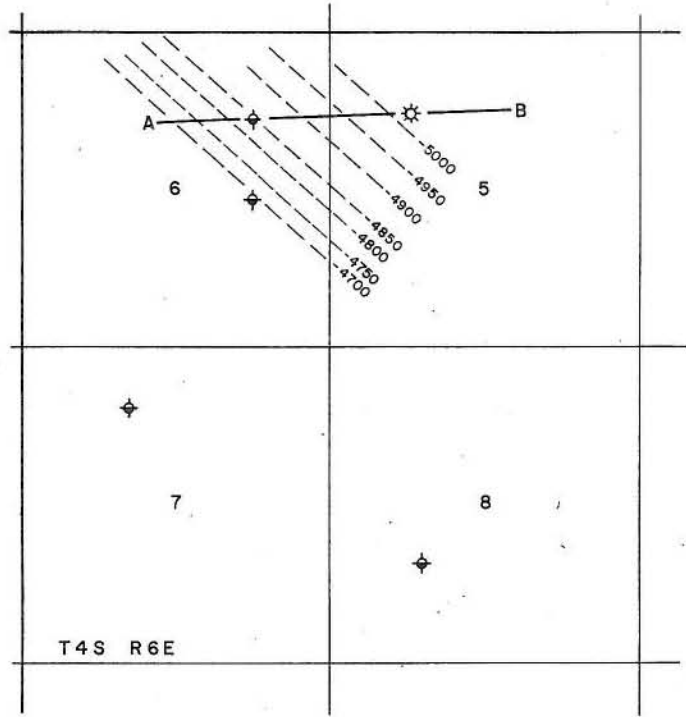
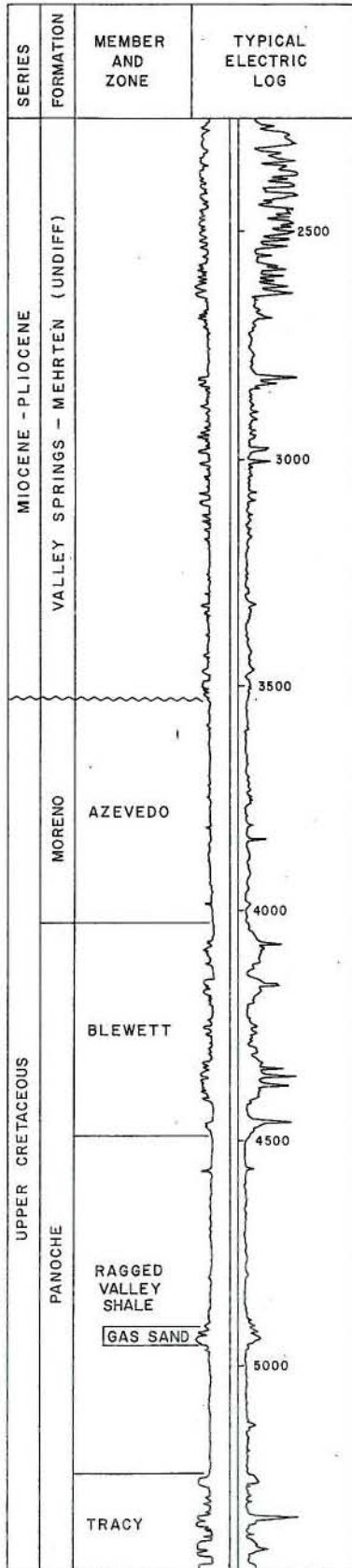
Remarks:

B/ Former Blewett zone well, recompleted in January 1979 as a dual producer from two intervals in the Azevedo.

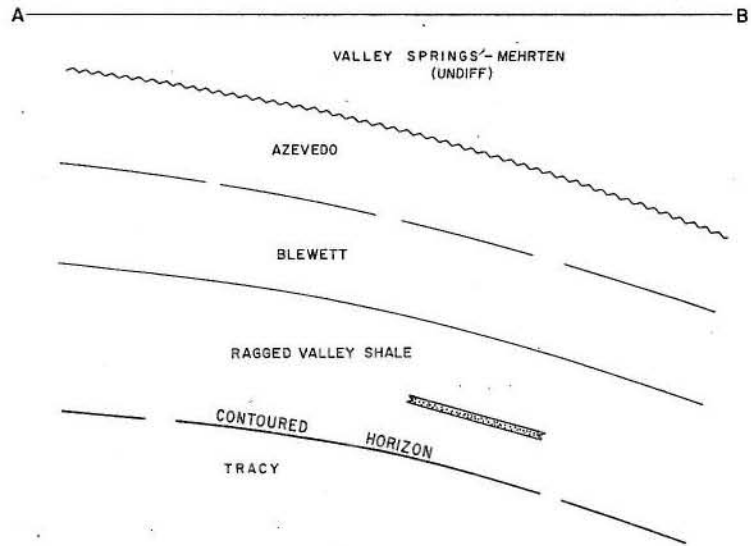
Selected References: Hill, F. L., 1962, Vernalis Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 48, No. 2.

# SOUTHWEST VERNALIS GAS FIELD

(Abandoned)



CONTOURS ON TOP OF TRACY





COUNTY: SAN JOAQUIN

VERNALIS, SOUTHWEST, GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Porter Sesnon, et al "Sesnon - Vernalis" 22-5	Same as present	5 4S 6E	MD	5,450	"Ragged Valley"	
Deepest well	Occidental Petroleum Cor. "Raspo" 1	Same as present	6 4S 6E	MD	6,628		lower Tracy sand Late Cretaceous

POOL DATA

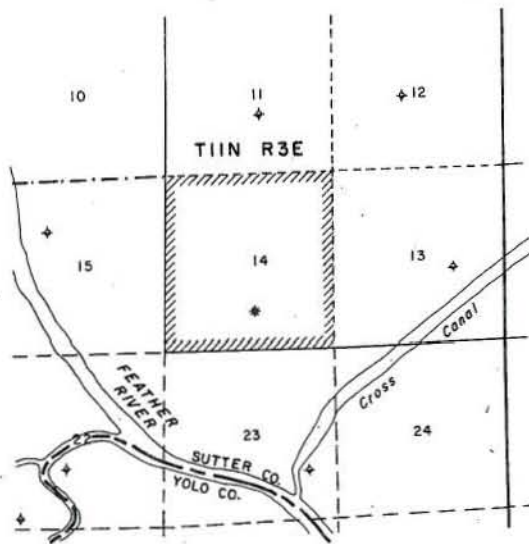
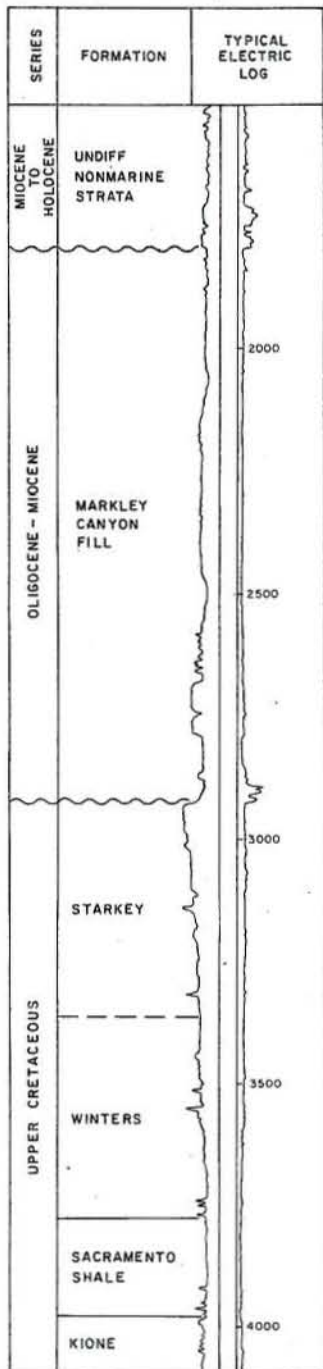
ITEM	RAGGED VALLEY					FIELD OR AREA DATA
Discovery date .....	August 1959					
Initial production rates						
Oil (bbl/day) .....	530					
Gas (Mcf/day) .....	340					
Flow pressure (psi) .....	1/4					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	2,090					
Reservoir temperature (°F) .....	126					
Initial oil content (STB/ac.-ft.) .....	760					
Initial gas content (MSCF/ac.-ft.) .....	Panoche					
Formation .....	Late Cretaceous					
Geologic age .....	4,560					
Average depth (ft.) .....	4					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	20					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	25*					
So <sub>g</sub> (%) .....	50*					
Sw <sub>i</sub> (%) .....	50*					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.616††					
Heating value (Btu/cu. ft.) .....	870					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	11,283					
Year .....	1960					

Base of fresh water (ft.): 2,600

Remarks: Commercial gas deliveries began in April 1960. The field was abandoned in March 1961. Only one well was completed and cumulative gas production was 12,063 Mcf.

Selected References:

# VERONA GAS FIELD



SUBSURFACE DATA NOT AVAILABLE

COUNTY: SUTTER

VERONA GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Davis Oil Co. "Nicholas" 1	Same as present	14 11N 3E	MD	4,088	Markley Canyon fill	Kione Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	MARKLEY CANYON FILL					FIELD OR AREA DATA
Discovery date .....	June 1979					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,185					
Flow pressure (psi) .....	480					
Bean size (in.) .....	5/16					
Initial reservoir pressure (psi) .....	792					
Reservoir temperature (°F) .....	93					
Initial oil content (STB/ac-ft.) .....	210-310					
Initial gas content (MSCF/ac-ft.) .....	Markley Canyon fill					
Formation .....	Oligocene-Miocene					
Geologic age .....						
Average depth (ft.) .....	1,840					
Average net thickness (ft.) .....	15					
Maximum productive area (acres) .....	40					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	15-22†					
So <sub>i</sub> (%) .....	40*					
Sw <sub>i</sub> (%) .....	60*					
Sg <sub>i</sub> (%) .....						
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.654					
Heating value (Btu/cu. ft.) .....	771					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

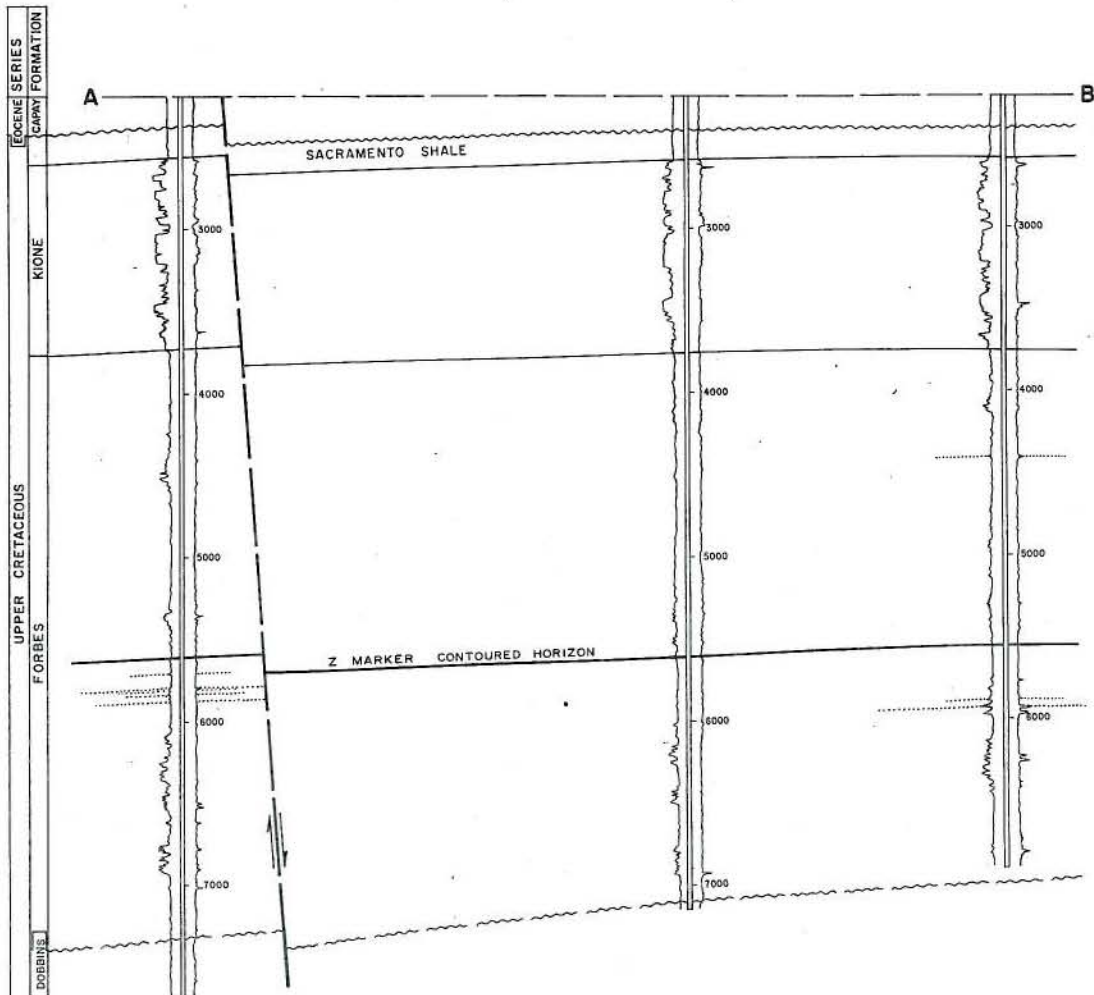
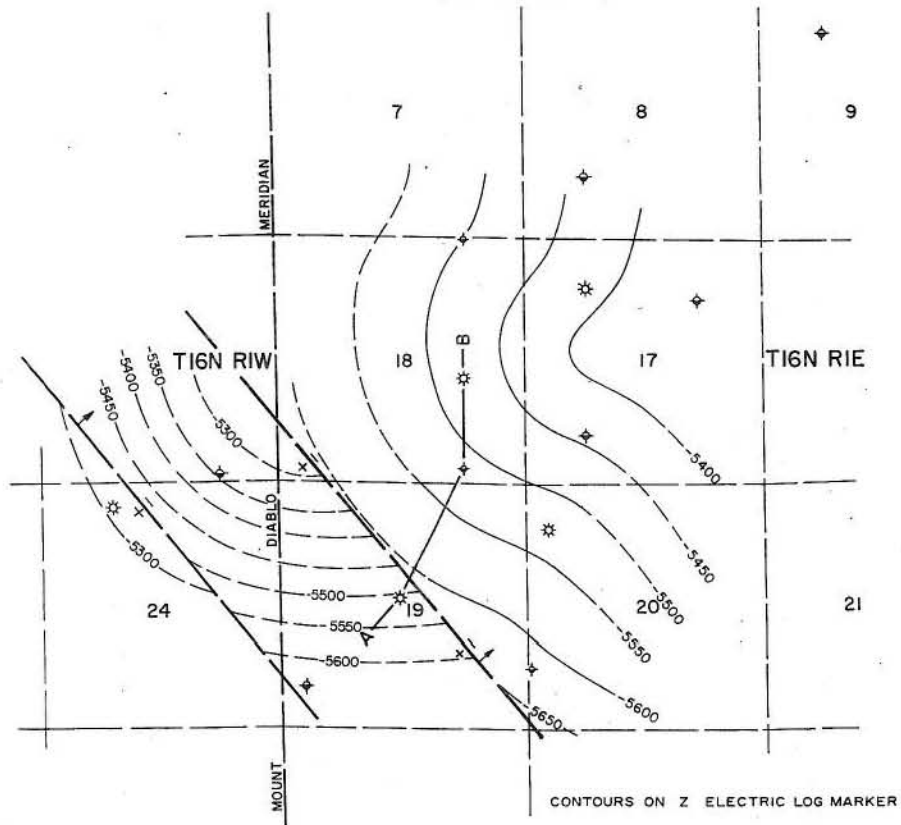
Peak oil production (bbl) Year .....						
Peak gas production, net (Mcf) Year .....						

Base of fresh water (ft.): 800

Remarks: Commercial gas deliveries have not yet begun.

Selected References:

# WEST BUTTE GAS FIELD ( Abandoned )



COUNTY: SUTTER

WEST BUTTE GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Occidental Pet. Corp. "Standard-Browning"	Occidental Pet. Corp. "Standard" 1	19 16N 1E	MD	7,664	unnamed sand stringers	G- zone Late Cretaceous
Deepest well	Occidental Pet. Corp. "Standard-Browning" 2	Same as present	20 16N 1E	MD	8,097		

POOL DATA

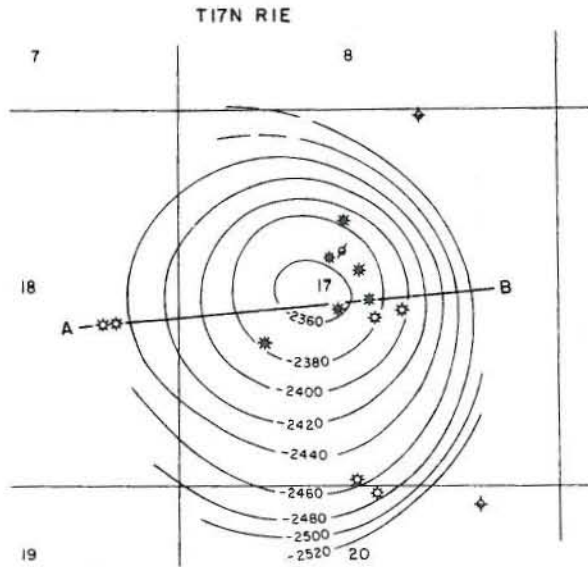
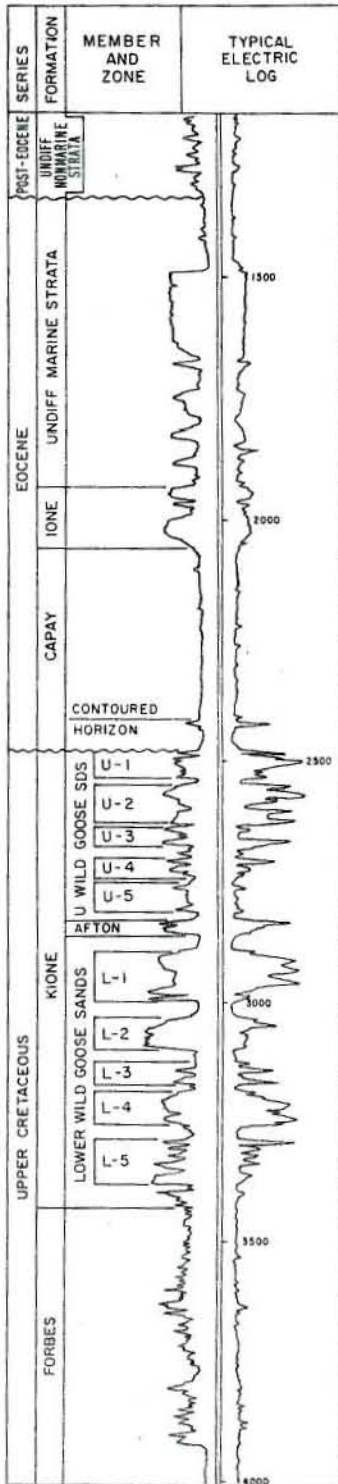
ITEM	UNNAMED SAND STRINGERS					FIELD OR AREA DATA
Discovery date .....	April 1961					
Initial production rates						
Oil (bbl/day) .....	2,271					
Gas (Mcf/day) .....	1,275					
Flow pressure (psi) .....	15/64					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,920-4,380					
Reservoir temperature (°F) .....	115-132					
Initial oil content (STB/ac.-ft.) .....	1,100-1,900					
Initial gas content (MSCF/ac.-ft.) .....	Forbes					
Formation .....	Late Cretaceous					
Geologic age .....	4,260-6,500					
Average depth (ft.) .....	8-50					
Average net thickness (ft.) .....						
Maximum productive area (acres) .....	960					
<b>RESERVOIR ROCK PROPERTIES</b>						
Porosity (%) .....	18-25***					
So <sub>g</sub> (%) .....	40-50***					
Sw <sub>g</sub> (%) .....	50-60***					
Permeability to air (md) .....						
<b>RESERVOIR FLUID PROPERTIES</b>						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.572					
Heating value (Btu/cu. ft.) .....	975-1,005					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
<b>ENHANCED RECOVERY PROJECTS</b>						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	351,120					
Year .....	1963					

Base of fresh water (ft.): 2,200

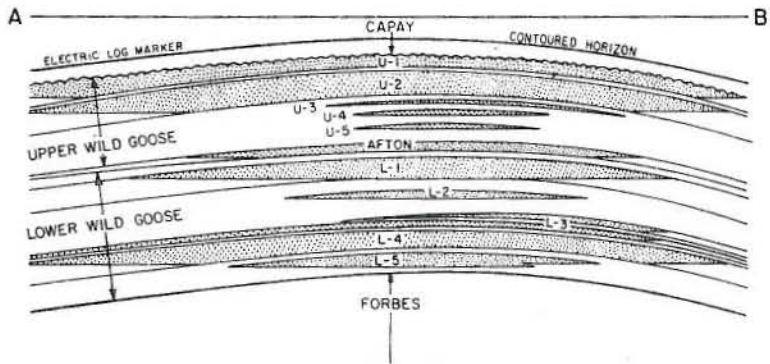
Remarks: Commercial gas deliveries began in August 1962. The field was abandoned in May 1970. Five wells were completed and cumulative gas production was 659,960 Mcf.

Selected References: Hluza, A. G., 1962, West Butte Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 48, No. 2.

# WILD GOOSE GAS FIELD



CONTOURS ON ELECTRIC LOG MARKER IN CAPAY



COUNTY: BUTTE and COLUSA

**WILD GOOSE GAS FIELD**

**DISCOVERY WELL AND DEEPEST WELL**

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Exxon Corp. "Wild Goose Unit 1" 1	Honolulu Oil Corp. "Honolulu-Humble Wild Goose" 1	17 17N 1E	MD	4,000	Lower Wild Goose	
Deepest well	Exxon Corp. "Howard F. Brady" 1	Humble Oil & Rfg. Co. "Howard F. Brady" 1	20 17N 1E	MD	7,890		Forbes Late Cretaceous

**POOL DATA**

ITEM	POOL DATA				FIELD OR AREA DATA
	HANGTOWN	UPPER WILD GOOSE	AFTON	LOWER WILD GOOSE	
Discovery date .....	September 1963	July 1953	September 1963	August 1951	
Initial production rates					
Oil (bbl/day) .....		7,340	4,840 <sup>a/</sup>	4,020	
Gas (Mcf/day) .....	4,000	880	1,040	1,370	
Flow pressure (psi) .....	940	36/64	24/64	24/64	
Bean size (in.) .....	24/64				
Initial reservoir pressure (psi) .....	1,105	1,200-1,310	1,335	1,345-1,500	
Reservoir temperature (°F) .....	82	98	87	105	
Initial oil content (STB/ac.-ft.) .....		810-888	930	900-1,000	
Initial gas content (MSCF/ac.-ft.) .....	770	Kione	Kione	Kione	
Formation .....	Kione	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Geologic age .....	Late Cretaceous				
Average depth (ft.) .....	2,400	2,500	2,850	2,900	
Average net thickness (ft.) .....	10	200	30	250	
Maximum productive area (acres) .....					360

**RESERVOIR ROCK PROPERTIES**

Porosity (%) .....	30*	30*	30*	30*	
So <sub>2</sub> (%) .....					
Sw <sub>1</sub> (%) .....	25*	25*	25*	25*	
Sg <sub>1</sub> (%) .....	75*	75*	75*	75*	
Permeability to air (md) .....					

**RESERVOIR FLUID PROPERTIES**

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.640	.640	-	.640	
Heating value (Btu/cu. ft.) .....	800	800	-	805	
Water:					
Salinity, NaCl (ppm) .....		30,473-55,640	-	30,473-45,368	
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

**ENHANCED RECOVERY PROJECTS**

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					8,248,811
Year .....					1961

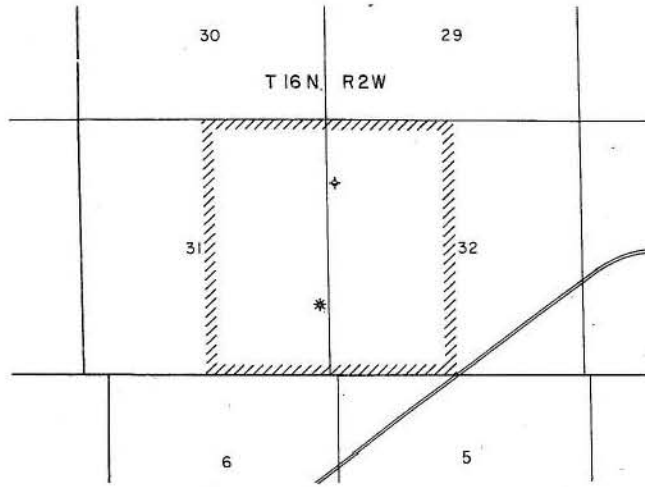
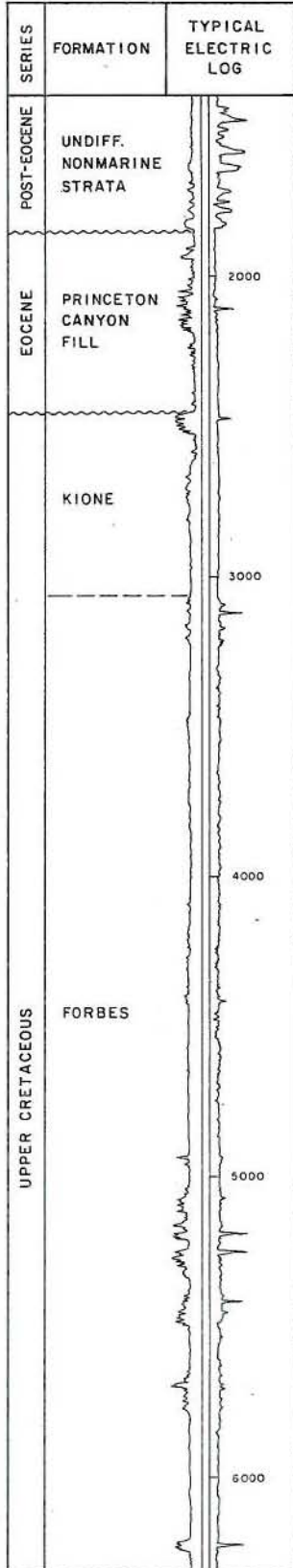
Base of fresh water (ft.): 1,050

Remarks: Commercial gas deliveries began in November 1951.

a/ Commingled production from Afton and Upper Wild Goose. Honolulu Oil Corp. tested this zone in open hole at a maximum rate of 2,980 Mcf per day in well "Honolulu-Humble Tule Goose" 1 (now Exxon Corp. "Wild Goose Gas Unit 1" 7) in July 1952.

Selected References: Hunter, G. W., 1955, Wild Goose Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 41, No. 1.

# WILLIAMS GAS FIELD



SUBSURFACE DATA NOT AVAILABLE



COUNTY: COLUSA

WILLIAMS GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Davis Oil Co. "Zumwalt" 1	Same as present	31 16N 2W	MD	6,275	Forbes	Forbes Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	FORBES					FIELD OR AREA DATA
Discovery date .....	August 1978					
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	710					
Flow pressure (psi) .....	470					
Bean size (in.) .....	1/4					
Initial reservoir pressure (psi) .....	2,760					
Reservoir temperature (°F) .....	118					
Initial oil content (STB/ac.-ft.) .....	530-750					
Initial gas content (MSCF/ac.-ft.) .....	Forbes					
Formation .....	Late Cretaceous					
Geologic age .....						
Average depth (ft.) .....	5,300					
Average net thickness (ft.) .....	10-20					
Maximum productive area (acres) .....	40					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	15-19***					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	55-60***					
Sg <sub>i</sub> (%) .....	40-45***					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.573††					
Heating value (Btu/cu. ft.) .....	970					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

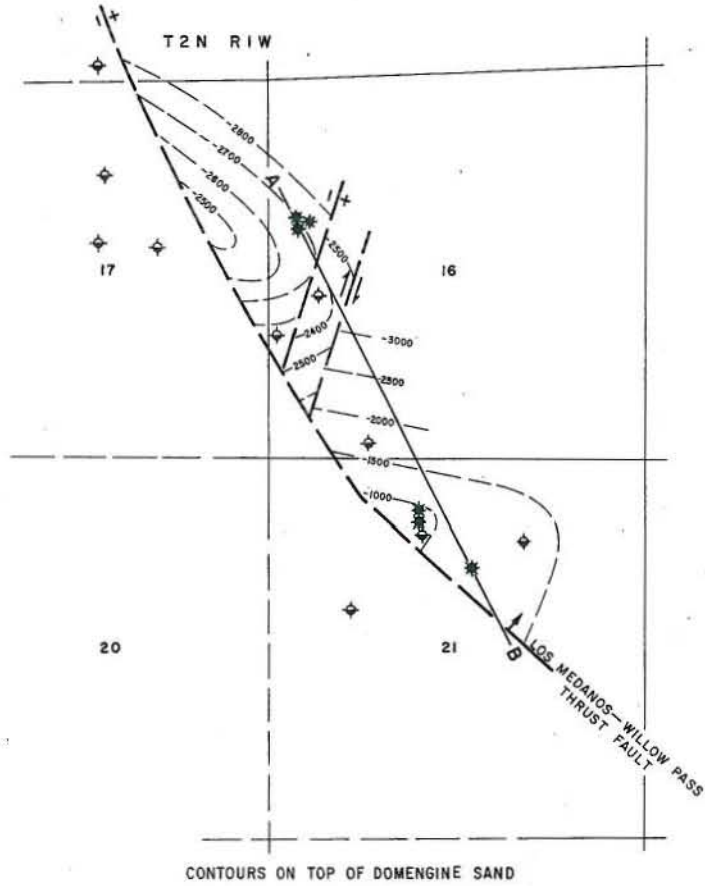
Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)						
Year .....						

Base of fresh water (ft.): 1,800

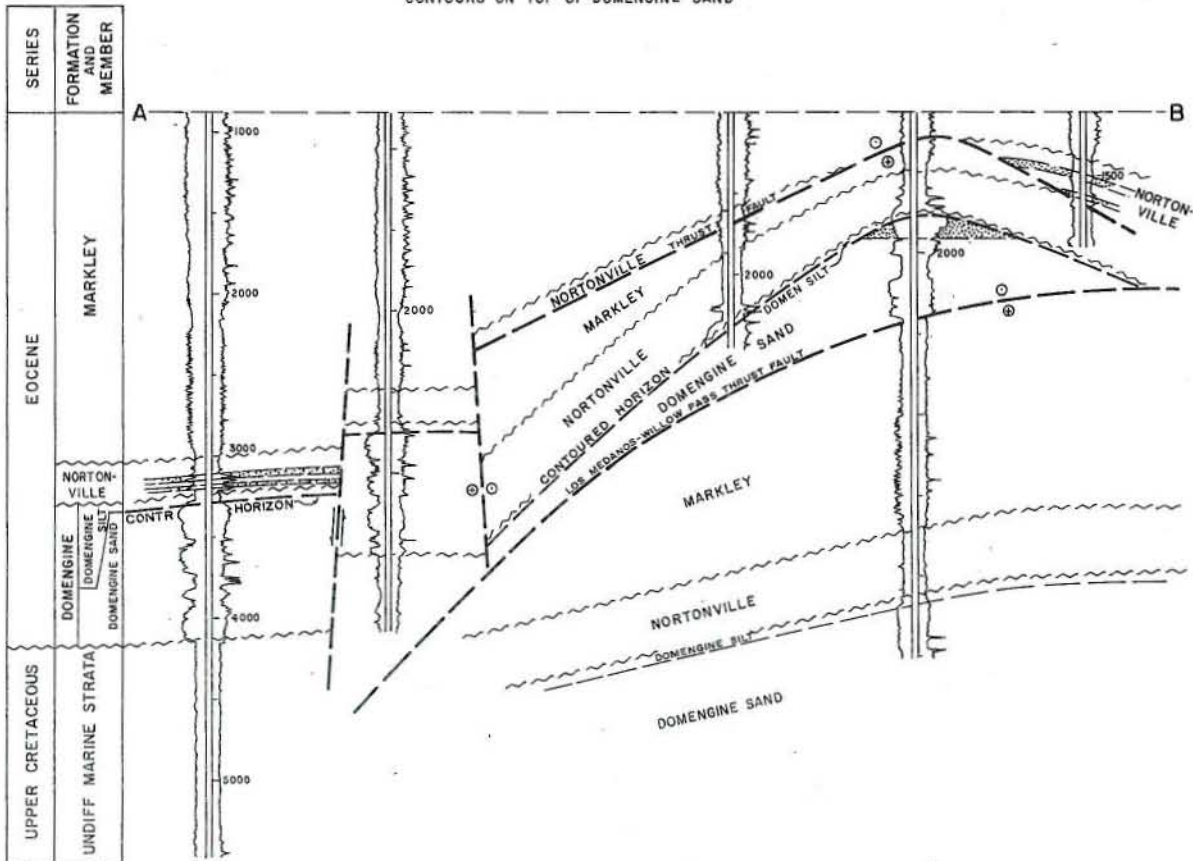
Remarks: Commercial gas deliveries have not yet begun.

Selected References:

# WILLOW PASS GAS FIELD (Abandoned)



CONTOURS ON TOP OF DOMENGINE SAND



COUNTY: CONTRA COSTA

WILLOW PASS GAS FIELD  
(ABD)

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	The Termo Co. "Faria Unit" 1	Trico Oil and Gas Co. "Faria Unit" 1	21 2N 1W	MD	4,518	Domengine	
Deepest well	The Termo Co. "Neustaedter" 1	Trico Oil and Gas Co. "Neustaedter" 1	16 2N 1W	MD	5,483		undiff. Cret. Late Cretaceous

POOL DATA

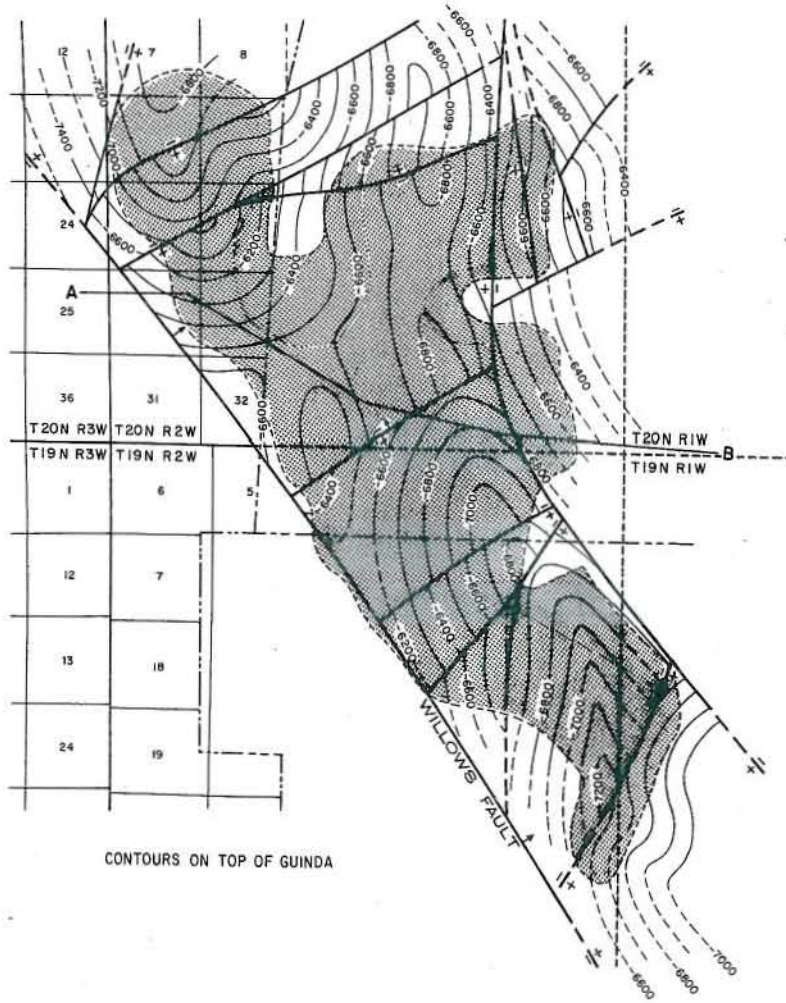
ITEM	NORTONVILLE		DOMENGINE		FIELD OR AREA DATA	
Discovery date .....	July 1959		May 1959			
Initial production rates						
Oil (bbl/day) .....						
Gas (Mcf/day) .....	1,500		4,300			
Flow pressure (psi) .....	310		290			
Bean size (in.) .....	3/8		3/4			
Initial reservoir pressure (psi) .....	530-1,335		650			
Reservoir temperature (°F) .....	97-106		98			
Initial oil content (STB/ac.-ft.) .....	260-710		320-440			
Initial gas content (MSCF/ac.-ft.) .....						
Formation .....	Nortonville		Domengine			
Geologic age .....	Eocene		Eocene			
Average depth (ft.) .....	1,500-3,100		1,800			
Average net thickness (ft.) .....	35		50			
Maximum productive area (acres) .....						85
RESERVOIR ROCK PROPERTIES						
Porosity (%) .....	26*		25-30***			
So <sub>g</sub> (%) .....	35*		25-35***			
Swi (%) .....	65*		65-75***			
Permeability to air (md) .....						
RESERVOIR FLUID PROPERTIES						
Oil:						
Oil gravity (°API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.562††		.575††			
Heating value (Btu/cu. ft.) .....	1,000		1,020			
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						
ENHANCED RECOVERY PROJECTS						
Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						
Peak oil production (bbt)						
Year .....						
Peak gas production, net (Mcf)						263,347
Year .....						1967

Base of fresh water (ft.): 150

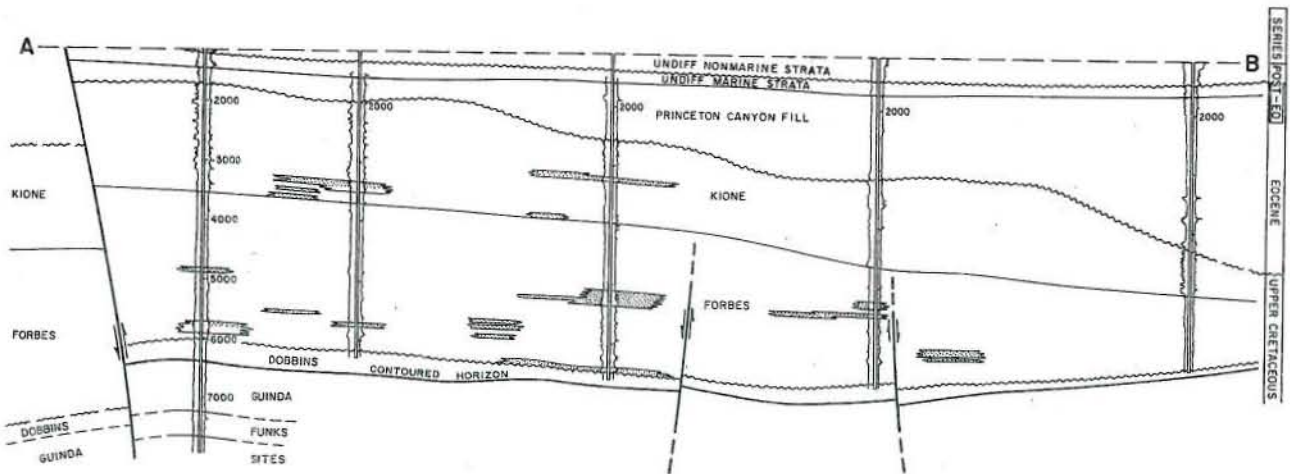
Remarks: Commercial gas deliveries began in April 1960. The field was abandoned in 1980. Six wells were completed and cumulative gas production was 2,927,805 McF.

Selected References: Matthews, J. F., Jr., 1963, Willow Pass Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 49, No. 1.

# WILLOWS-BEEHIVE BEND GAS FIELD



CONTOURS ON TOP OF GUINDA



COUNTY: GLENN

WILLOWS-BEEHIVE BEND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Teal Petroleum Co. "Transamerica" 71-18	The Ohio Oil Co. "E. E. Willard" 1-A	18 20N 2W	MD	6,014	Forbes	
Deepest well	Sun Oil Co. "Sunray-General Petroleum Whyler-Wolcott Unit" 1	Sunray Oil Corp. "Sunray-General Petroleum Whyler - Wolcott Unit" 1	11 19N 2W	MD	10,807		basement pre-Late Cret.

POOL DATA

ITEM	FIELD OR AREA DATA					
	PRINCETON CANYON FILL	KIONE	FORBES	DOBBINS	GUINDA	
Discovery date	September 1956	August 1938	September 1954	March 1958	March 1955	
Initial production rates						
Oil (bbl/day)						
Gas (Mcf/day)	3,037	5,355	5,000	1,500	280	
Flow pressure (psi)	857	515	2,050	740	1,080	
Bean size (in.)	19/64	21/32	5/16	48/64	-	
Initial reservoir pressure (psi)	909	900-1,705	2,200-4,200	4,400	-	
Reservoir temperature (°F)	100	94-106	110-118	129	135	
Initial oil content (STB/ac.-ft.)	600	620-1,400	1,600-2,200	1,000	-	
Initial gas content (MSCF/ac.-ft.)	Princeton Cyn. fill	Kione	Forbes	Dobbins	Guinda	
Formation	Eocene	Late Cretaceous	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Geologic age	2,045	1,930-3,650	4,420-6,400	6,700	7,350	
Average depth (ft.)	55	10-80	3-60	20	70	
Average net thickness (ft.)						
Maximum productive area (acres)						13,380

RESERVOIR ROCK PROPERTIES

	PRINCETON CANYON FILL	KIONE	FORBES	DOBBINS	GUINDA
Porosity (%)	30*	26-32	24-30	18	
S <sub>oi</sub> (%)					
S <sub>wi</sub> (%)	28*	30-35	30-35	45	
S <sub>gi</sub> (%)	72*	70	70	55	
Permeability to air (md)	-	400	300	-	

RESERVOIR FLUID PROPERTIES

	PRINCETON CANYON FILL	KIONE	FORBES	DOBBINS	GUINDA
Oil:					
Oil gravity (°API)					
Sulfur content (% by wt.)					
Initial solution GOR (SCF/STB)					
Initial oil FVF (RB/STB)					
Bubble point press. (psia)					
Viscosity (cp) @ °F					
Gas:					
Specific gravity (air = 1.0)	.570	.570	.570	.570*	
Heating value (Btu/cu. ft.)	990	990	985	985*	
Water:					
Salinity, NaCl (ppm)	1,710	4,960-18,400	1,200-17,100		
T.D.S. (ppm)					
R <sub>w</sub> (ohm/m) (77°F)					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects	PRINCETON CANYON FILL	KIONE	FORBES	DOBBINS	GUINDA
Date started					
Date discontinued					

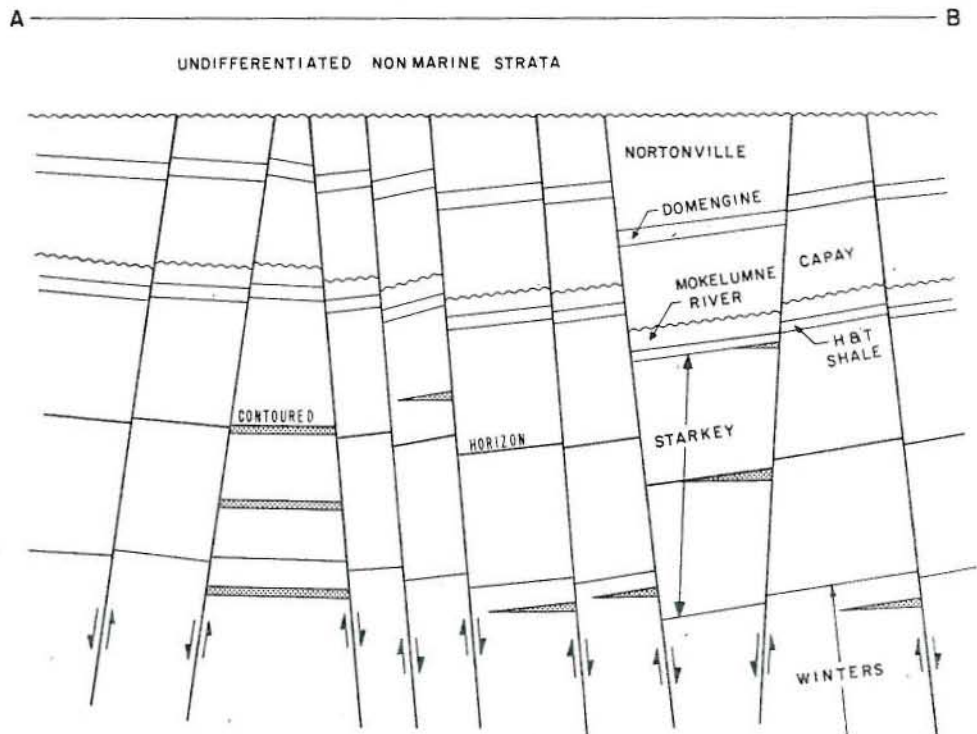
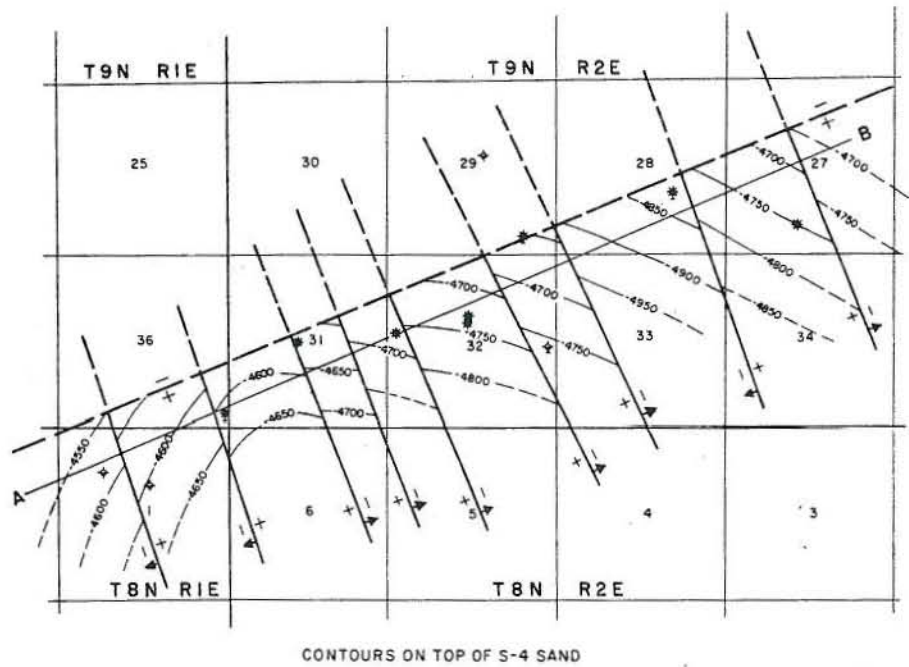
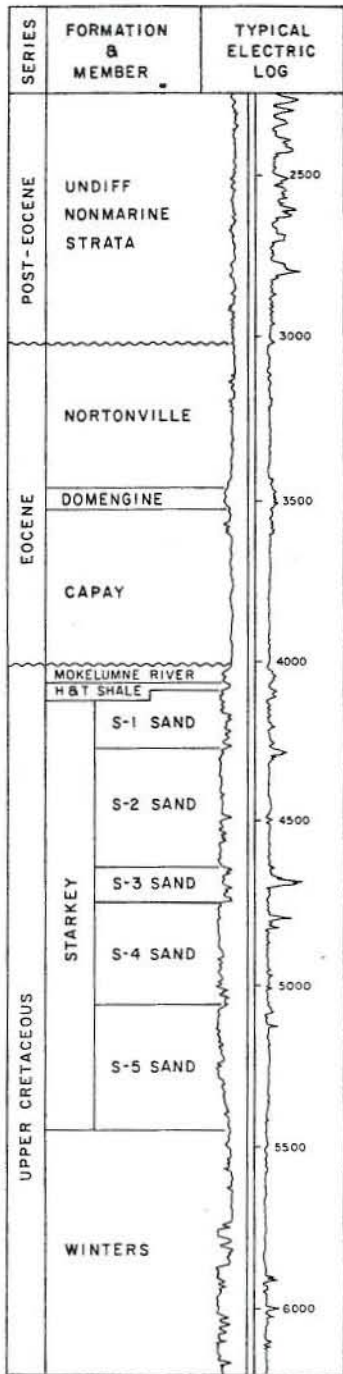
Peak oil production (bbl)	PRINCETON CANYON FILL	KIONE	FORBES	DOBBINS	GUINDA
Year					
Peak gas production, net (Mcf)					
Year					29,202,019 1959

Base of fresh water (ft.): 850-1,500

Remarks: The Ohio Oil Co. well "E. E. Willard" 1 (now operated by Transamerica Development Co.) blew out in January 1938 while operator was preparing to pull drill pipe from 4,505 feet. A large crater was formed in which the derrick and equipment were lost. The well blew gas and water for 23 days. Commercial gas deliveries began in March 1944. Many of the gas sand stringers in the Kione and Forbes formations have been given local names by operators.

Selected References: Barger, R. M., and Sullivan, J. C., 1966, Willows-Beehive Bend Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 52, No. 2, Part 2.

# WILLOW SLOUGH GAS FIELD



COUNTY: YOLO

WILLOW SLOUGH GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B. & M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "Schuder" 1-32	Same as present	32 9N 2E	MD	6,190	Starkey	
Deepest well	Shell Oil Co. "Stephens" 1-28	Same as present	28 9N 2E	MD	7,504 <sup>a/</sup>		Winters Late Cretaceous

POOL DATA

ITEM	POOL DATA				FIELD OR AREA DATA
	STARKEY	WINTERS			
Discovery date .....	October 1974	June 1975			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	1,020	375			
Flow pressure (psi) .....	1,750	1,000			
Bean size (in.) .....					
Initial reservoir pressure (psi) .....	2,200	2,530			
Reservoir temperature (°F) .....	113-117	118			
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	940-1,200	960-1,200			
Formation .....	Starkey	Winters			
Geologic age .....	Late Cretaceous	Late Cretaceous			
Average depth (ft.) .....	4,850	5,990			
Average net thickness (ft.) .....	25	10			
Maximum productive area (acres) .....					1,600

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	27-31†	25-29†			
So <sub>g</sub> (%) .....	43-48†	45-50†			
Swi (%) .....	52-57†	50-55†			
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

<b>Oil:</b>					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
<b>Gas:</b>					
Specific gravity (air = 1.0) .....	.605	.605			
Heating value (Btu/cu. ft.) .....	900	900			
<b>Water:</b>					
Salinity, NaCl (ppm) .....		5,040			
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					

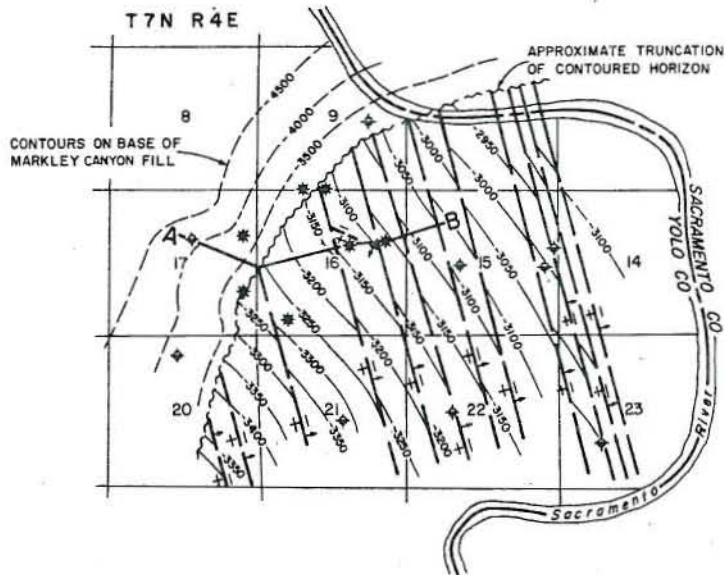
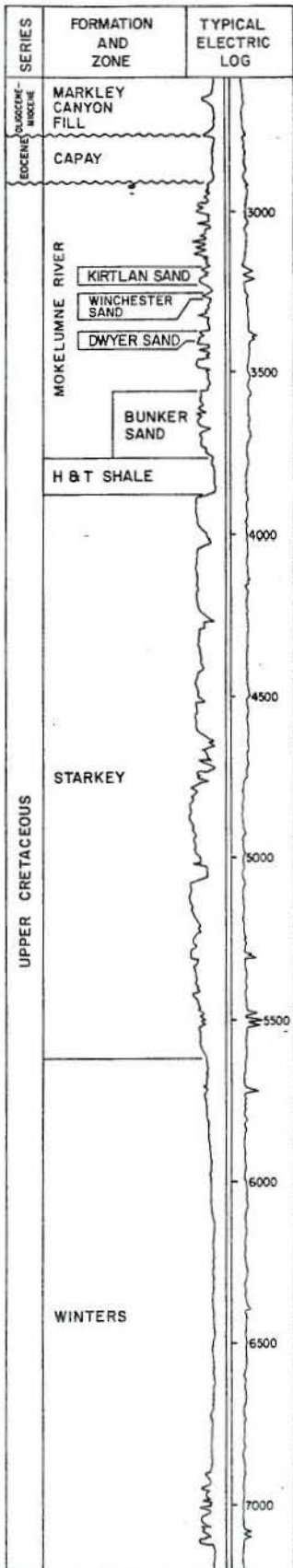
Base of fresh water (ft.): 2,800

Remarks: Commercial gas deliveries began in February 1977.

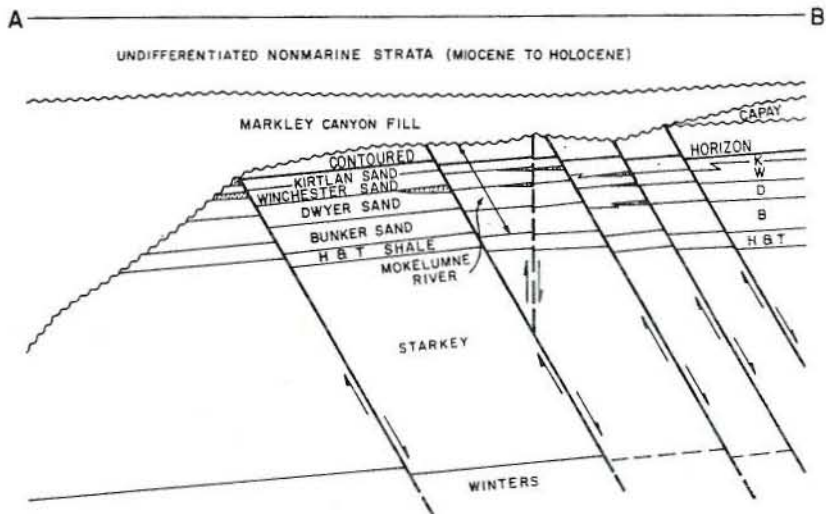
<sup>a/</sup> Directional well, true vertical depth is 7,138 feet.

Selected References:

# WINCHESTER LAKE GAS FIELD



CONTOURS ON TOP OF KIRTLAN SAND



COURTESY OF PHILLIP B. KISTLER



COUNTY: YOLO

WINCHESTER LAKE GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Atlantic Oil Co. "Winchester Lake" 2	Same as present	9 7N 4E	MD	5,599	Winchester	
Deepest well	Atlantic Oil Co. "Dwyer" 1	Same as present	9 7N 4E	MD	7,200	Dwyer	Winters Late Cretaceous

POOL DATA

ITEM	POOL DATA				FIELD OR AREA DATA
	KIRTLAN	WINCHESTER	DWYER	BUNKER	
Discovery date .....	August 1975	August 1973	December 1974	February 1976	
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	3,670	1,070	3,682	1,108	
Flow pressure (psi) .....	1,110	1,250	1,115	1,292	
Bean size (in.) .....	3/8	3/16	3/8	3/16	
Initial reservoir pressure (psi) .....	1,380	1,460	1,430	1,500	
Reservoir temperature (°F) .....	118	120	121	125	
Initial oil content (STB/ac.-ft.) .....					
Initial gas content (MSCF/ac.-ft.) .....	480-780	530-860	520-840	540-870	
Formation .....	Mokelumne River Late Cretaceous	Mokelumne River Late Cretaceous	Mokelumne River Late Cretaceous	Mokelumne River Late Cretaceous	
Geologic age .....					
Average depth (ft.) .....	3,150	3,320	3,380	3,680	
Average net thickness (ft.) .....	10	15	10	10	480
Maximum productive area (acres) .....					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	22-30***	22-30***	22-30***	22-30***	
So <sub>g</sub> (%) .....					
Sw <sub>i</sub> (%) .....	35-45***	35-45***	35-45***	35-45***	
Sg <sub>i</sub> (%) .....	55-65***	55-65***	55-65***	55-65***	
Permeability to air (md) .....					

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.607††	.630††	.630††	.600††	
Heating value (Btu/cu. ft.) .....	886	873	873	920	
Water:					
Salinity, NaCl (ppm) .....					
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					

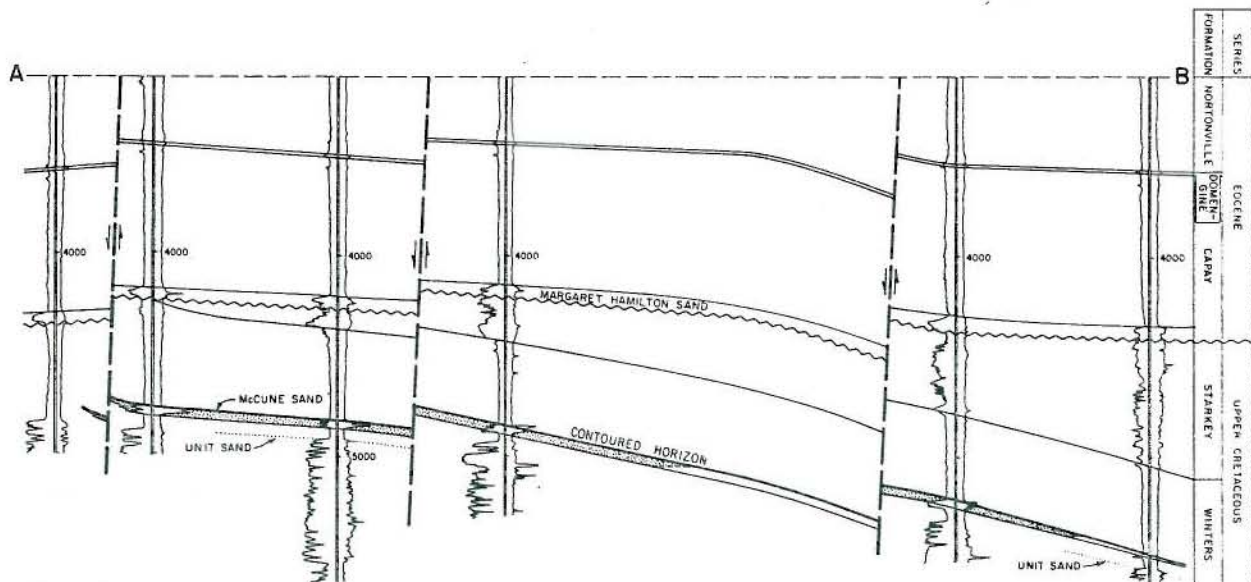
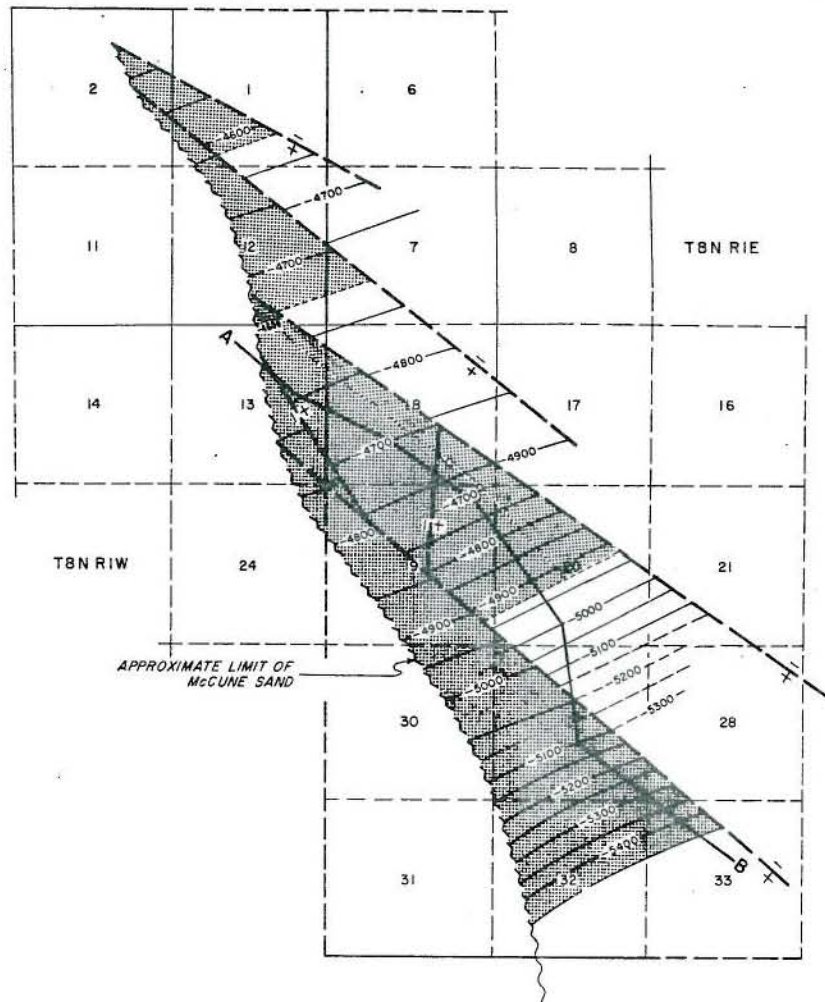
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					416,227
Year .....					1979

Base of fresh water (ft.): 1,800

Remarks: Commercial gas deliveries commenced May 1978.

Selected References:

# WINTERS GAS FIELD



COUNTY: SOLANO and YOLO

WINTERS GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Shell Oil Co. "McCune" 1	Same as present	29 8N 1E	MD	5,528	McCune	
Deepest well	Albert A. Rembold "Winters Unit 2" 1	Shell Oil Co. "Winters Unit 2" 1	18 8N 1E	MD	8,493		Forbes Late Cretaceous

POOL DATA

ITEM	CAPAY (HOOPER)	McCUNE	UNIT	UNIT OIL ZONE	FIELD OR AREA DATA
Discovery date	September 1975	February 1946	September 1946	September 1959	
Initial production rates					
Oil (bbl/day)					
Gas (Mcf/day)	1,339	12,500	3,060 <sup>a/</sup>	8,321 <sup>b/</sup>	
Flow pressure (psi)	1,720	1,626	1,953	1,513	
Bean size (in.)	3/16	1/2	1/4	1/2	
Initial reservoir pressure (psi)	1,920	2,107	2,489	2,489	
Reservoir temperature (°F)	112	116	116	125	
Initial oil content (STB/ac.-ft.)					
Initial gas content (MSCF/ac.-ft.)	1,300	1,100-1,300	1,400-1,700		
Formation	Capay	Winters	Winters	Winters	
Geologic age	Eocene	Late Cretaceous	Late Cretaceous	Late Cretaceous	
Average depth (ft.)	4,615	4,850	4,920	5,585	
Average net thickness (ft.)	3	20	5	5	
Maximum productive area (acres)					1,000

RESERVOIR ROCK PROPERTIES

Porosity (%)	30**	28-32	30-34	-	
So <sub>g</sub> (%)					
Swi (%)	30**	35-40	28-33	-	
Sgi (%)	70**	60-65	67-72	-	
Permeability to air (md)	-	340-650	-	-	

RESERVOIR FLUID PROPERTIES

Oil:					
Oil gravity (°API)					
Sulfur content (% by wt.)					
Initial solution GOR (SCF/STB)					
Initial oil FVF (RB/STB)					
Bubble point press. (psia)					
Viscosity (cp) @ °F					
Gas:					
Specific gravity (air = 1.0)	.579	.616	-		.578
Heating value (Btu/cu. ft.)	985	850	865		957
Water:					
Salinity, NaCl (ppm)					
T.D.S. (ppm)					
R <sub>w</sub> (ohm/m) (77°F)					

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects					
Date started					
Date discontinued					

Peak oil production (bbl)					
Year					
Peak gas production, net (Mcf)					2,235,158
Year					1963

Base of fresh water (ft.): 2,400

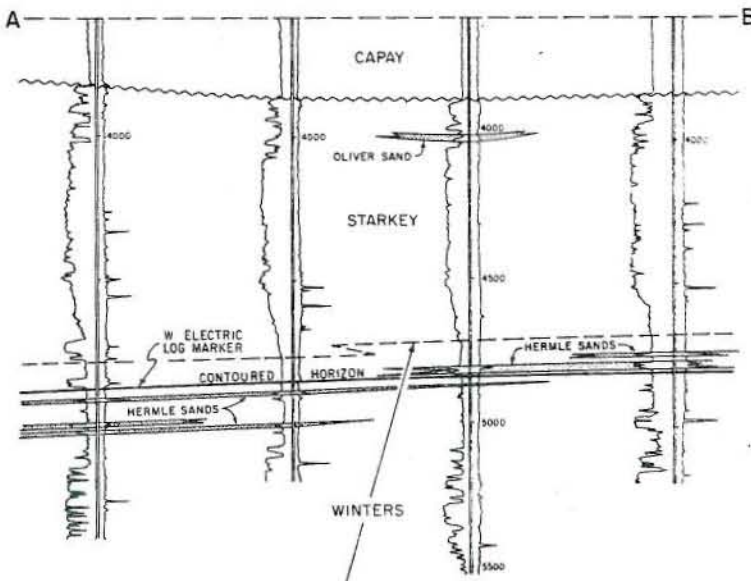
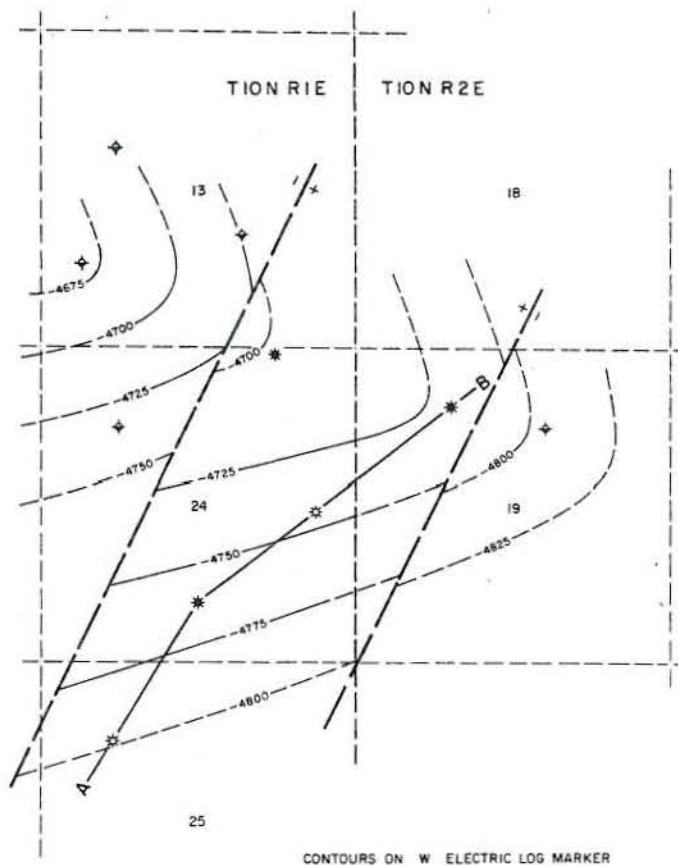
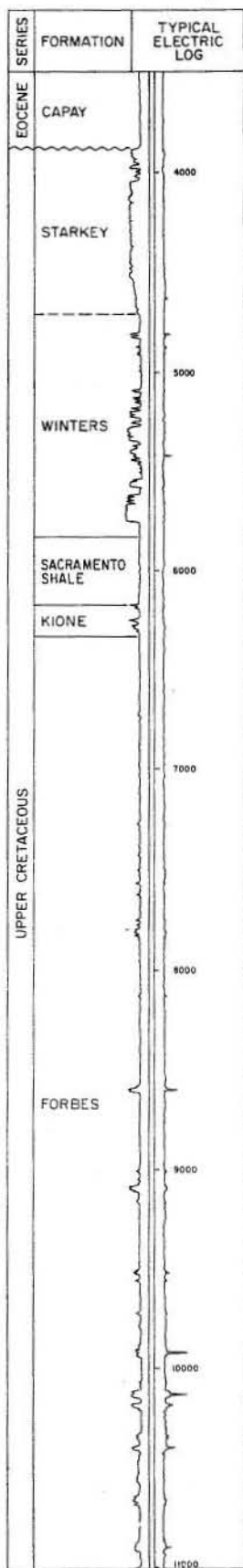
Remarks: Commercial gas deliveries began in January 1949. Texaco Inc. "McCune" 1 was the first commercial oil well in the Sacramento Valley and was the only oil well in the field; it was abandoned in March 1966. Cumulative oil production was 18,560 barrels with a peak production of 9,865 barrels in 1960.

<sup>a/</sup> Commingled production from McCune and Unit zones.

<sup>b/</sup> Texaco Inc. "McCune" 1 was completed as a gas well but began flowing 29° API gravity oil when connected to salesline. Average daily production during May 1960 was 79 bbl oil and 512 Mcf gas.

Selected References: Hunter, G. W., 1956, Winters Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 42, No. 2.

# WOODLAND GAS FIELD



COUNTY: YOLO

WOODLAND GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	Atlantic Oil Co. "Shell-Oliver" 1	Same as present	24 10N 1E	MD	11,007	Oliver	Forbes Late Cretaceous
Deepest well	Same as above	"	"	"	"	"	"

POOL DATA

ITEM	POOL DATA				FIELD OR AREA DATA
	OLIVER	HERMLE			
Discovery date .....	September 1962	October 1962			
Initial production rates					
Oil (bbl/day) .....					
Gas (Mcf/day) .....	2,296	8,639			
Flow pressure (psi) .....	1,279	1,816			
Bean size (in.) .....	18/64 <u>a/</u>	30/64 <u>a/</u>			
Initial reservoir pressure (psi) .....	1,765	2,100			
Reservoir temperature (°F) .....	88	98-113			
Initial oil content (STB/ac.-ft.) .....	840-1,100	930-1,200			
Initial gas content (MSCF/ac.-ft.) .....	Starkey	Winters			
Formation .....	Late Cretaceous	Late Cretaceous			
Geologic age .....					
Average depth (ft.) .....	3,988	4,430-5,130			
Average net thickness (ft.) .....	32	15			
Maximum productive area (acres) .....					700
<b>RESERVOIR ROCK PROPERTIES</b>					
Porosity (%) .....	25-29	25-29			
S <sub>o</sub> (%) .....					
S <sub>w</sub> (%) .....	37-42	37-42			
S <sub>g</sub> (%) .....	58-63	58-63			
Permeability to air (md) .....					
<b>RESERVOIR FLUID PROPERTIES</b>					
Oil:					
Oil gravity (°API) .....					
Sulfur content (% by wt.) .....					
Initial solution GOR (SCF/STB) .....					
Initial oil FVF (RB/STB) .....					
Bubble point press. (psia) .....					
Viscosity (cp) @ °F .....					
Gas:					
Specific gravity (air = 1.0) .....	.594	.594			
Heating value (Btu/cu. ft.) .....	923	923			
Water:					
Salinity, NaCl (ppm) .....		20,544			
T.D.S. (ppm) .....					
R <sub>w</sub> (ohm/m) (77°F) .....					
<b>ENHANCED RECOVERY PROJECTS</b>					
Enhanced recovery projects .....					
Date started .....					
Date discontinued .....					
Peak oil production (bbl)					
Year .....					
Peak gas production, net (Mcf)					
Year .....					4e1,757 1960

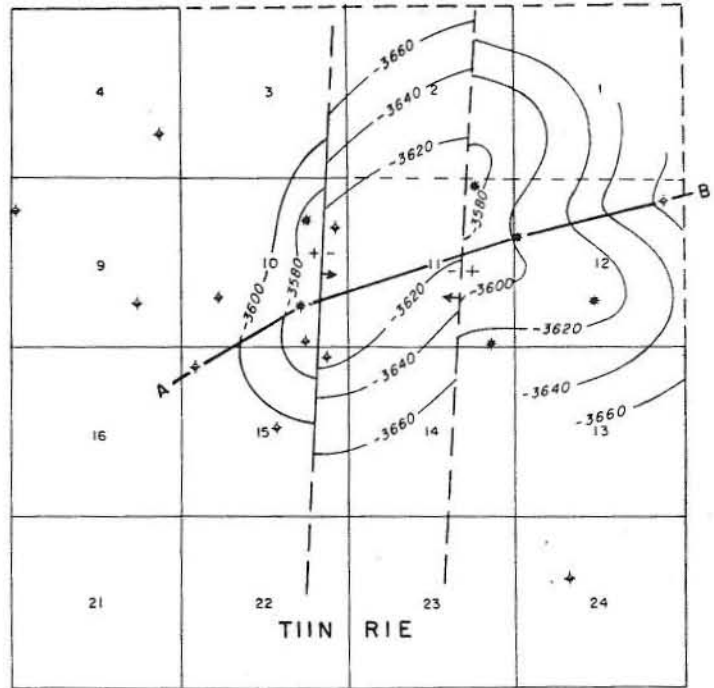
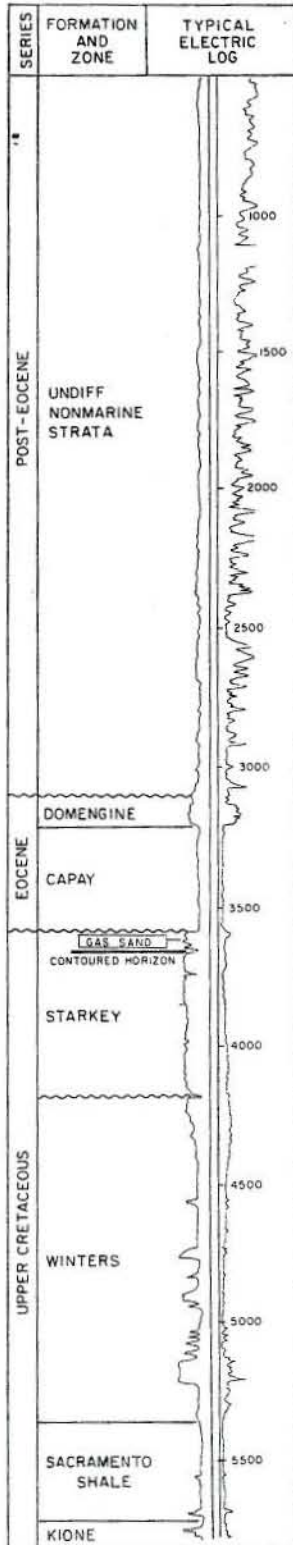
Base of fresh water (ft.): 3,100

Remarks:

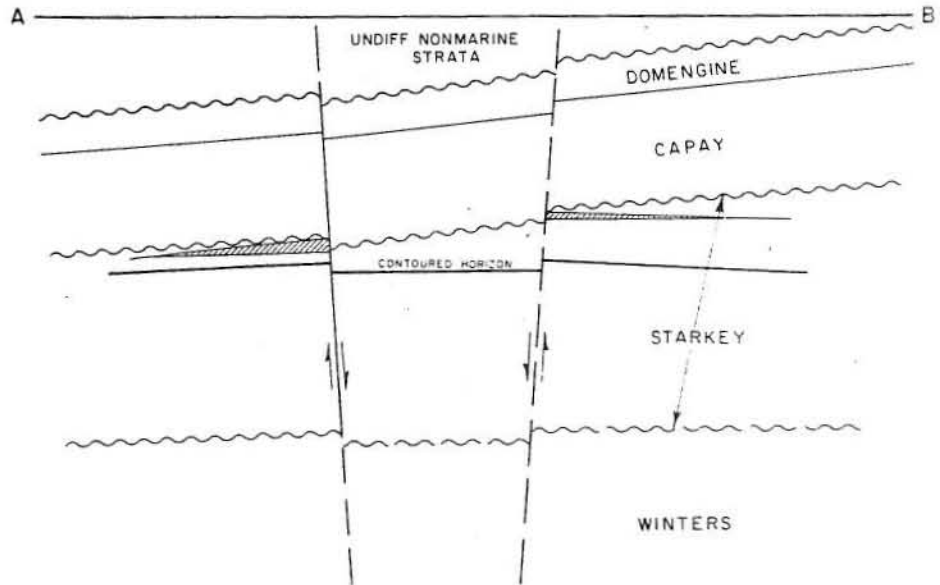
a/ Bean sizes were estimated. Wells tested through orifice meters.

Selected References: Beecroft, G. W., 1966, Woodland Gas Field: Calif. Div. of Oil and Gas, Summary of Operations -- Calif. Oil Fields, Vol. 52, No. 1.

# ZAMORA GAS FIELD



CONTOURS ON STARKEY MARKER



COUNTY: YOLO

ZAMORA GAS FIELD

DISCOVERY WELL AND DEEPEST WELL

	Present operator and well designation	Original operator and well designation	Sec. T. & R.	B.&M.	Total depth (feet)	Pool (zone)	Strata & age at total depth
Discovery well	ARCO Oil and Gas Co. "AROW-Knaggs" 1	Westates Petroleum Co. "AROW-Knaggs" 1	10 11N 1E	MD	3,805 <sup>a/</sup>	Starkey	
Deepest well	Pexco, Inc. "Knaggs-Wallace" 1	Same as present	12 11N 1E	MD	11,005		Late Cretaceous

POOL DATA

ITEM	STARKEY					FIELD OR AREA DATA
Discovery date .....	April 1977					
Initial production rates						
Oil (bbl/day) .....	3,479					
Gas (Mcf/day) .....	1,353					
Flow pressure (psi) .....	24/64					
Bean size (in.) .....						
Initial reservoir pressure (psi) .....	1,474					
Reservoir temperature (°F) .....	100					
Initial oil content (STB/ac.-ft.) .....	740-920					
Initial gas content (MSCF/ac.-ft.) .....	Starkey					
Formation .....	Late Cretaceous					
Geologic age .....						
Average depth (ft.) .....	3,580					
Average net thickness (ft.) .....	30					
Maximum productive area (acres) .....	350					

RESERVOIR ROCK PROPERTIES

Porosity (%) .....	28-32†					
So <sub>g</sub> (%) .....						
Sw <sub>i</sub> (%) .....	40-45†					
Sg <sub>g</sub> (%) .....	55-60†					
Permeability to air (md) .....						

RESERVOIR FLUID PROPERTIES

Oil:						
Oil gravity (*API) .....						
Sulfur content (% by wt.) .....						
Initial solution GOR (SCF/STB) .....						
Initial oil FVF (RB/STB) .....						
Bubble point press. (psia) .....						
Viscosity (cp) @ °F .....						
Gas:						
Specific gravity (air = 1.0) .....	.578					
Heating value (Btu/cu. ft.) .....	955					
Water:						
Salinity, NaCl (ppm) .....						
T.D.S. (ppm) .....						
R <sub>w</sub> (ohm/m) (77°F) .....						

ENHANCED RECOVERY PROJECTS

Enhanced recovery projects .....						
Date started .....						
Date discontinued .....						

Peak oil production (bbl)						
Year .....						
Peak gas production, net (Mcf)	499,145					
Year .....	1979					

Base of fresh water (ft.): 1,900

Remarks: Commercial gas deliveries began in September 1978.  
<sup>a/</sup> Directional well; true vertical depth is 3,770 feet.

Selected References: